ALL INDIA OBSTETRIC AND GYNAECOLOGICAL CONGRESS

2nd to 4th January 1936

At

MUSEUM THEATRE MADRAS

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THE FIRST ALL-INDIA OBSTETRIC AND GYNAECOLOGICAL CONGRESS, MADRAS, 1936.

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THE OBSTETRIC CONGRESS

GOVERNOR OPENS SESSION

DR. SCUDDER'S ADDRESS

MADRAS, Jan. 2.

The First All-India Obstetric and Gynaecological Congress met, this morning, at the Museum Theatre under the presidency of Dr. Miss Ida S. Scudder of the Women's Hospital, Vellore. A large number of delegates and visitors, from different centres in British India and the Indian States, attended the Congress.

At 10-15 a.m., His Excellency the Governor of Madras, accompanied by Major D. P. Johnstone, arrived at the place and was received by the President-elect and Chairman of the Reception Committee, and taken to the dais

WELCOME ADDRESS

DR. LAKSHMANASWAMI MUDALIAR

Dr. A. Lakshmanaswami Mudaliar, Chairman of the Reception Committee, welcoming the delegates and visitors to the Congress said:

It is with feelings of profound thankfulness and sincere pleasure that I rise to extend to you all a most cordial welcome on behalf of the Reception Committee, to this, the first All-India Obstetric and Gynaecological Congress. We are happy to welcome to our City such a large and distinguished gathering of Obstetricians and Gynaecologists from different parts of India. We extend our fraternal greetings to the President and members of the Bombay Obstetric and Gynaecological Society, to representative delegates from Calcutta, Nagpur, Delhi and other parts of Northern India and to the distinguished members of our profession from the Indian States of Hyderabad, Mysore, Travancore, Cochin and Pudukottah. To that noble band of workers, for whose services to the women and children of our land we cannot feel too grateful to, the medical missionaries we desire to extend a particularly warm welcome. To the delegates who have so kindly responded to our invitation and come from different parts of Southern India and who form the real bulwark of the profession—I refer to the medical practitioners in the rural areas and in remote corners of the Presidency—we are genuinely pleased to accord a welcome, for, they more than any one else, have to face occasionally obstetric problems of such difficulty and magnitude that will perhaps make the stoutest of us quail. We are convinced that this gathering would not have served its full purpose, its deliberations would not have the far-reaching effects that we desire them to have, if the general practitioners on whom the brunt of obstetric work in the mofussil parts necessarily falls, were not here to exchange views and to discuss the many problems of obstetric and Gynaecological interest from their point of view. And lastly, may I, on behalf of the Reception Committee and on behalf of the delegates from British India, welcome most warmly the delegates from French India and Portuguese India, whose presence here to-day is a happy augury of the unity of the medical profession in Greater India and a symbol of the keen interest that the profession takes in the welfare of the women and children of the subcontinent.

the subcontinent.

GENESIS OF THE IDEA

Your Excellency, for some time past, some of us have been dreaming of this day, when we can foregather on a common platform, the Obstetricians and Gynaecologists from different parts of this country. It was not till June last that the happy idea could materialise and its fruition is due entirely to the whole-hearted support extended by the members of the Obstetric and Gynaecological Societies of Bombay and Southern India. We desire to express our deep sense of gratitude to the members of the Bombay Society in particular, who have been most kind and considerate to us and have given us their fullest co-operation and encouragement in all our undertakings. We desire also to express our grateful thankfulness to Sir Frank Connor and to the present Surgeon-General, Colonel C. Newcomb, whose unfailing sympathy and support helped us in no small measure to organise this gathering. To Your Excellency's Government, we

are particularly grateful for the facilities given to those employed in mofussil hospitals to attend this Congress by extending to them the privilege of special casual leave.

It is perhaps not inappropriate that the first Congress of this kind should be held in the City of Madras. Madras may not stand comparison in many respects with the Gateway of India or with the City of Palaces—the second largest city in the British Empire. But Madras is proud and justly so, of the place it occupies in the Obstetric world of to-day and it is in no spirit of narrow provincialism that I venture to maintain that no other city in India could have claimed this honour with greater confidence and dignity. Madras claims the honour of having the oldest maternity institution in British India, nay, in the Far East—for, the Government Hospital for women and children next door was founded in 1844 and will be celebrating its centenary before the decade is over. Madras claims the honour of having instituted the first training school for midwives in India and for long the only training school of its kind in the whole of this country. Madras is happy to realise that it was the first city which extended through its University and Medical College, the portals of the profession to the women of the country. It is here that the first post-graduate school in obstetrics and gynaecology was established and to-day the Madras University is the only University which has established a Diploma through its affiliated hospitals in this speciality. It is, therefore, with pardonable pride that we welcome you to our historic city, but this very fact makes us all the more anxious about our future and the part Madras will play in the years to come. It is our hope and constant prayer that the people of this Presidency and the Government of the day, will feel a tithe of the pride we feel in our famous institutions and that they will do all they can to maintain its level of efficiency and extend its usefulness to the greatest possible extent.

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efficiency and extend its usefulness to the greatest possible extent.

Fellow-delegates, I am happy to announce to you that the idea of holding such a Congress has been widely welcomed by distinguished obstetricians all over the British Empire and when a little later, I call upon the Secretary of the Congress to read to you some of the messages that have been received, you will yourself realise how much the idea of holding this Congress has been appreciated and what high hopes are entertained about its future and the part it will play in ameliorating the condition of the women and children of India. How far these hopes will be realised and to what extent our dreams would materialise, it is not for me to prophesy at present. We are encouraged in our task by the kindly sentiments expressed and the good wishes extended to us in such generous terms by the leading obstetricians of the day.

It is our hope that this Congress will enable us to know each other better and to appreciate the work that is being carried on in other parts of the Indian Empire. We hope that this assembly will act as a stimulus to every one of us, not only to keep ourselve abreast of the times, but to take a genuine interest in tackling the many problems that await solution in a tropical country like ours. We feel sure that gatherings, such as these will foster the spirit of research and encourage some of us to increased activity in this direction, where a very fertile and virgin field awaits exploration. It is our hope that through such conferences there will be a dissemination of correct and up-to-date ideas of the subject and that the discussions here would tend to focus our minds on the larger problems that await solution. It would be fitting and proper that a gathering, such as this would be in a better position to offer its

be in a better position to offer its considered opinion on the difficult, yet most important, questions of under-graduate and post-graduate training and what is equally important, on the proper training of midwives. We hope further that it will be possible from time to time to place our experiences before the authorities of the land and to acquaint them with our view-point as to the measures needed for the care of the mothers and infants of this country. And lastly, we hope that this great gathering will serve as a stimulus for the spread of our ideals and that each one of us will be enabled to carry with him the torch of knowledge to his own place and there spread the virus of enthusiasm to the medical profession and the general public.

POST-GRADUATE STUDY

Your Excellency, it is hardly necessary for me to speak at length on the subject of obstetric aid to the people of this country or to dilate on the heavy mortality incident to childbirth or the great amount of morbidity and sickness that follows childbirth. Some of us who have had the

sad privilege of attending on Indian mothers for the best part of our professional life, realise only too well, how much has been done in the past and only a little better, how much yet remains to be done. Two problems of transcendental importance which face us to-day are—the affording of facilities for post-graduate study and the encouragement of research in Obstetrics and Gynaecology. In no part of medical science is there greater need for post-graduate study than in the field of Obstetrics. Every one of us will easily realise that the time when one is in a position to understand and appreciate the practical side of Obstetrics is when one has finished his student's career and becomes an apprentice in a maternity institution. And when it is further realised that midwifery has to be practised as an emergency in many cases and in the remotest parts of the country, the need for adequate training will be more easily appreciated. May I take this opportunity of appealing to Your Excellency's Government, to provincial Governments in other places, and to those in charge of large maternity institutions, to keep open the doors of the institutions for post-graduate training, and subject to the facilities available, to impose no restrictions of any kind, territorial, provincial or otherwise. Every post-graduate adequately trained, is an asset to the nation and an instrument of relief to

the mothers of this country.

ENCOURAGEMENT OF RESEARCH

Another great need of the hour is the encouragement of research. There are problems facing the obstetrician in India which are peculiar to this country and which must be tackled and solved in this country. The deficiency diseases in relation to pregnancy, diseases like osteomalacia which are so widely prevalent in some parts of India, but which fortunately are rare in Southern India, the varying severity of the toxaemias of pregnancy in different parts of the country, the several tropical diseases and their effects on pregnancy—these and many other such problems are being tackled, but there is greater need for organised research to be undertaken. May we not hope that an appeal from this Congress and through Your Excellency to the generous public will not fail to evoke a sympathetic response? May we not also hope that various administrations in British India and Indian India will co-operate in a spirit of healthy rivalry to organise and support all such laudable enterprise?

Your Excellency, I must apologise for having spoken at some length. To-day is a red letter day in the annals of the obstetric history of this country and it is our hope and prayer that this Congress which is opened under your august auspices will grow from strength to strength and as years roll by, the tender seedling planted by Your Excellency to-day will grow to be a mighty tree spreading its sheltering branches throughout the length and breadth of India, such that under its shady bowers may gather together time and again the cream of the medical profession practising the twin specialities of Obstetrics and Gynaecology, such that its mighty breeze may waft to remotest corners of our land and bring comfort and solace to the rich and poor alike among the mothers of India. And may the Giver of all good help us in this noble cause, guide us along the path of wisdom and lead us to the promised land!

Your Excellency, on behalf of the Reception Committee and this Congress, may I now request you to be graciously pleased to declare this Congress and the Exhibition open.

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GOVERNOR'S SPEECH

H. E. Lord Erskine, in declaring the Congress and Exhibition open, said:—

I must at the outset confess that it was not without some feelings of apprehension that I accepted your Committee's kind invitation to inaugurate this Congress to-day. The position of a layman who is called upon to address a gathering of experts on their own particular subject is not an easy one. I feel that there is very little I can add to your Chairman's eloquent survey of the general aspects of this Congress, and absolutely nothing that I can contribute towards your scientific discussions. My function, then, is to be brief, and to say what I have to say not so much to you men of science and medicine gathered here, but rather through you to the public of India at large.

I would, however, first like to tell you how very much impressed I am by the striking demonstration of enthusiasm for the cause of the mothers and children of India that is afforded by the large and widely representative assemblage that I see here before me. It must have cost a great deal of trouble and energy to organise this Congress and no little trouble to many of you to come long distances to attend it, and I would like to offer my most cordial congratulations and welcome to all who are participating. Your keenness augurs well for the advancement of your subject, and the holding of this Congress is assuredly a legitimate source of pride and inspiration to us all.

It would be an impertinence for me to labour the importance of this subject to you who are gathered in this hall, but I am not so sure that its importance and its magnitude are sufficiently realised by the general public. Here in Madras as your Chairman has said, we were among the first to tackle those problems. We claim to be second to none in both the study and the practice of this

claim to be second to none in both the study and the practice of this branch of medical science, and we are proud of the fact that doctors come from all over India to attend the post-graduate courses at our Maternity Hospital. Yet in spite of all this, we have to admit that the mortality rate amongst mothers in Madras is four to five times as high as the mortality rate in Great Britain. Surely no stronger evidence is required of the work that is yet to be done both in the field of practical training in research and also in the development of a public sanitary consciousness: and when I say that no fewer than 4,000 maternity cases have been dealt with during the past year in our Madras hospital alone, there can, I think, be no more striking proof of the extreme urgency of this work.

MATERNAL MORTALITY

The question of maternal mortality is one that is now occupying a prominent place in the mind of most civilised countries. Many important advances have been made of late

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years both in obstetrical treatment and in the appliances used in that treatment, such as those which are on view in your Exhibition to-day. Here in India we may claim that our Governments have not been slow to recognise their duty towards the advancement of this science, while our professional men have been eager to take advantage of the latest discoveries and improvements. But we have a vast country and an immense population to deal with, and in a tropical land there are many and varied problems not met with elsewhere. What is wanted is a wider propagation of the knowledge already to hand, and a more intensive research into the peculiar problems connected with tropical diseases. Surely, ladies and gentlemen, there is no cause more truly deserving of popular interest, practical assistance and financial support. To save the mothers of India from suffering, disease and death and to rear up healthier, happier children—this is a task than which none could be dearer to the heart of any nation. Let the people of India see to it that nothing is wanting to the advancement of that cause which they can achieve by their endeavour and their charity.

For your part, ladies and gentlemen, you have surely chosen the best means towards that end by gathering here for an exchange of experience and mutual discussion of your problems. I feel sure that this Congress will of itself result in a big step forward in scientific knowledge. I understand that, though it is the first of its kind to be held, it will by no means be the last, and that it is intended to extend the organisation of Provincial Societies, which is already functioning so well here and in Bombay, on a permanent footing and throughout India. It is a fine purpose that you have before you and I am confident that the time is not far distant when that purpose will be triumphantly fulfilled. I wish this Congress all possible success and have very great pleasure in declaring it and its allied Exhibition open.

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ing it and its allied Exhibition open.

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ELECTION OF PRESIDENT

The formal election of the President followed.

Dr. N. A. Purandare (Bombay) proposed Miss Ida Scudder to the chair and said that she was well-known in the obstetric world because of her skill as an obstetrician and gynaecologist and because of the record of the institutions,—the Medical School and the Women's Hospital at Vellore,—with which she was connected. It was in the fitness of things, he said, that a doctor of her eminence in the field should preside over the deliberations of the Congress.

Dr. (Miss) H. M. Lazarus, seconding the proposition, said that born in South India, Miss Ida Scudder had been working in their midst for the last thirty-five years relieving pain and suffering. Her powers of organisation, spirit of service and ability as a practitioner were, the speaker said testified to by the history of the institutions she had built in Vellore, which began work in a small room and grew steadily into a famous hospital and medical school. She knew that the institutions attracted students and patients from distant parts of India. It was Miss Lazarus said, not only an honour but a source of inspiration and encouragement to them in their work that the Congress should be presided over by the lady.

Dr. M. V. Webb, supporting the motion, said that she felt the election of Miss Scudder as President of the Congress, was a special honour to womanhood.

Miss Ida Scudder was then formally installed in the chair amidst cheers.

installed in the chair amidst cheers.

MESSAGES TO THE CONGRESS

Dr. M. B. Prabhu, Secretary of the Reception Committee, then read the messages conveying good wishes to the Congress received from different Obstetricians and Gynaecologists in India and abroad. These included messages from Dr. Ewan McLean of the British College of Obstetricians and Gynaecologists; Prof. Kedarnath Das of the Carmichael Medical College, Calcutta; Sir Comyns Berkeley, Professor of Gynaecology, Middlesex Hospital and Editor of 'The Journal of Obstetrics and Gynaecology of the British Empire": Professor Blair-bell, Foundation President of the British Association of Obstetricians and Gynaecologists and Professor of Obstetrics of the Liverpool University; Professor R. W. Johnstone of the Edinburgh University; Dr. M. S. Balfour, late of the Women's Indian Medical Service, Dame Lois McIlroy of the Royal Free Hospital, London; Dr. J. S. Fairbairn, past President of the British College of Obstetricians and Gynaecologists; Lt.-Col. V. B. Green-Armitage, Retired Professor of Obstetrics and Gynaecology of the University of Calcutta, and Col. Gow, Dr. Hayes, Dr. Houlton and Dr. Jhirad.

PRESIDENTIAL ADDRESS

Miss Ida S. Scudder, the President, then delivered her address. She said:

It is with especial pleasure that I have the honour of giving you all a welcome to this, the first Obstetrical and Gynaecological Congress of All-India. The impressions and inspirations which result from such meetings are always far-reaching.

In July 1935 I had the singular privilege of attending the meeting of the Medical Association of the United States of America and Canada held in Atlantic City, U. S. A. There, one had the pleasure of seeing and meeting some of the outstanding Medical and Surgical men and women of the two countries, as well as representatives of Great Britain, Europe and the East. All left the Conference inspired with what they had seen and heard, and with almost a sense of awe as they realised the advance that was being made. There is much to be learned from those who are making great discoveries, and doing intensive research work in Medicine and these Congresses are a great factor in promoting world-wide enthusiasm and co-operation and in passing on to others the many new facts and methods learned.

Here in Madras a great forward step has been taken, and to-day we meet as the first All-India Obstetric and Gynaecology Congress whose influence should be felt not only in India but throughout the world, for in India we find certain operations and diseases peculiar to this land.

For the past three years, a group of members of the medical profession in Madras have been contemplating the

possibilities of holding such an All-India Congress. It was felt, however, that it was necessary first to organize provincial associations, and later with their co-operation to arrange for similar Congresses.

A provincial organisation for South India was established in December 1933 and later Bombay arranged for an Obstetrical section in connection with the All-India Medical Association Annual Conference and the question of organising an Association in Bombay was raised.

Finally in 1935 the Madras Society approached the Bombay Society with a view to call an All-India Obstetrical and Gynaecological Congress and this present Congress was inaugurated under the joint auspices of the Bombay Obstetrical Society and the Obstetrical and Gynaecological Society of Madras and South India.

The two existing Associations of Madras and Bombay since their organisation have done good work and it is the hope of this Congress that every province will organise its provincial Association and that we may look forward to a great future of usefulness, when an All-India Obstetrical and Gynaecological Congress may be held yearly, or possibly biennially with all provinces represented.

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with all provinces represented.

AIMS OF THE CONGRESS

What should be some of the aims of this Congress?

As an outcome of this Congress, research should be stimulated, and, with this end in view, we should encourage the establishment of an Indian Obstetrical and Gynaecological Journal in order that there may be mutual help and inspiration through the interchange of experience and knowledge.

There is a great need of such a journal to reach all practitioners who are keen on watching the progress of Medical Science in these subjects. The young practitioner, especially in a distant village, soon finds that he needs help and that his experience is so limited that he is constantly making mistakes and is greatly perplexed as he is confronted with grave medical problems. These village practitioners are eager to do up-to-date work and we should assist them to keep pace with the medical world. An Obstetrical and Gynaecological Journal should be started.

Standards in the villages must be raised. Few young doctors leave their schools and colleges without a desire to give good service to their patients.

The older practitioners need to keep apace with modern methods as surely as the young members of the profession. Therefore, as an Obstetrical and Gynaecological Congress, can we not establish a journal worthy of the cause?

With concentrated effort, India should be able to lead in these subjects, for here in India we have unique opportunities and unlimited material for research along obstetrical and gynaecological lines, as well as unequalled opportunities for alleviating suffering among women.

Secondly, our aim should be to attack the obstetrical problem of the villages which we all (and especially those of us who work in the mofussil) realise is wellnigh insurmountable.

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WORK IN THE VILLAGES

The uneducated *dai* steeped in superstition and ignorance, frequently and unwittingly brings untold suffering and death to her patient. Many efforts have been made in the past to solve this question, but it is so vast that we have often faltered because of its magnitude. We must consider what we can, as a Congress do, in attacking this problem. Our help and stimulation is needed, and our standards should be raised. Could this not be done through a Central Organisation whereby a frequent and careful supervision of all obstetrical and gynaecological work could be carried on? If all the ignorant dais could be replaced by well-educated and trained midwives and nurses, the future problem would be simplified.

One of our greatest needs in India to-day is co-operation (a) between all medical workers; (b) between District Boards and local bodies and (c) between the medical workers and the villager himself.

All District and local bodies should be encouraged to co-operate with the central hospitals in this vast work and encouraged to supply ambulances to bring patients from the villages to headquarter hospitals where a highly efficient staff of doctors, nurses and midwives should always be found.

We must have the co-operation of the public in replacing ignorance and superstition by well-educated medical workers. Baroda has set us an example by having a circulating library in her villages. Could we not follow this excellent example, especially along medical lines? Educate the villager, with moving pictures, lectures, circulating libraries, etc.

The outlook is so vast as to make it intensely inspiring and fascinating. Instead of our young practitioners flocking to and over-crowding our cities, if we could help them to catch a vision of service to our great village population, and be determined to go out and raise the standard of Medicine in the surrounding country, it would be immensely worth while. This leads us to our second phase of the country problem.

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the country problem.

The problems that face practitioners and trained midwives in the villages, are great, whether they work privately, or in small outpost dispensaries. They meet more difficult obstetrical and gynaecological problems than those met with in large city hospitals. The demand upon their knowledge and skill is great. Trained in large centres where the equipment is adequate and even lavish, the practitioner in a village is often face to face with very limited supplies—a poor assortment of instruments; and inadequate sterilizing and hospital equipment and they become discouraged, then lapse into slipshod methods which lead to very faulty technique—with all its disastrous results.

Would it be possible for the Congress to organise in such a way, that through our Central Base these practitioners, nurses and midwives would be carefully supervised, and be given an opportunity at stated intervals to study (perhaps for a month each year) in some large central hospital and be expected to undergo post-graduate courses at the expiration of a certain number of years. In this way our standards would be raised. Village practitioners should not confine themselves to the Medical problems alone, but to general uplift of the villages.

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Let us, as a newly organized Congress, allow no opportunity pass, but let us press forward, so that in the future this Obstetrical and Gynaecological Congress of India may be one of the most outstanding in the world. This can be done if we all work together.

Your Excellency, I trust that in the future you may look back upon this occasion as one of the great advance steps made in India during this decade. May to-day be epoch-making. I desire to extend my congratulations to and appreciation of the splendid work that has been done by Dr. Lakshmanaswami Mudaliar, Dr. Lazarus, Dr. Smith, Dr. Prabhu and others of the Madras Congress, to whom we are especially indebted for this meeting, and in looking over our programme, we are delighted to find names of those who have done outstanding work in India and whom we have often longed to meet face to face to-day we have this opportunity and rejoice in it.

May we be inspired to go forward with greater zeal and enthusiasm than ever before, to do outstanding work along these important lines, which will be recognised the world over. We have opportunities for service to womanhood that few have and may we be worthy of this great to calling to lead in the future in all matters pertaining to obstetrics and Gynaecology.

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VOTE OF THANKS

Col. C. M. Plumptre proposed a vote of thanks to His Excellency. He said that the words of advice given by His Excellency in his address would be borne in mind during the discussions of the Congress. He was sure the exchange of experience and ideas would be to the general good of the profession.

The Congress then adjourned. The afternoon session will commence at 2 p.m., when papers will be read by Dr. S. M. Trasi, Dr. B. N. Purandare, Dr. T. Bhaskara Menon, Dr. M. B. Prabhu and by Dr. D. M Satur.

In the evening, there will be a reception to the delegates by the Chairman of the Reception Committee at the Medical College grounds and it will be followed by a cinema show of Medical films by the Motion Picture Society of India.

THE EXHIBITION

The Exhibition organised in connection with the First Session of the All India Obstetrical and Gynaecological Congress on the Museum grounds is attracting a large number of visitors. There are about a dozen stalls in the exhibition, wherein are exhibited medical and surgical goods manufactured by prominent firms in India in foreign countries. The exhibits consist mainly of surgical appliances and chemical products useful particularly in the practice of Obstetrics and Gynaecology. Milk foods and infants' requirements and specifics and drugs also are in view in the stalls.

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MESSAGES RECEIVED.

The following messages have been received wishing the Congress success :—

SIR EWEN MCLEAN, President, British College of Obstetricians and Gynaecologists :—

" Cordial greetings. I am convinced of the need and of the success of the congress ".

SIR KEDARNATH DAS, Principal, Carmichael Medical College, Calcutta :—

" Regret absence due to illness. Wishing success to this Congress of far reaching importance : may its future grow year after year ".

SIR COMYNS BERKELEY, Prof. of Obstetrics, Middlesex Hospital, and Editor, " Journal of Obstetrics and Gynaecology of the British Empire ' :—

Please convey to those of my colleagues who will be attending the first All-India Obstetric and Gynaecological Congress at Madras on January 2nd, 1936, my sincere congratulations on this auspicious occasion.

The British Congress of Obstetrics and Gynaecology has been the means of advancing not only the science and practice of these subjects but also such meetings have proved to be of the greatest value by bringing into close contact experts, in these Departments of Medicine, who before were not personally acquainted. In a fairly long service, I have found, that the personal knowledge of a man, allows one to estimate his true worth, and this has been an outstanding value to me, as Editor of the British Journal of Obstetrics and Gynaecology, as also to the members of the British Congress.

I wish the All-India Congress a long and useful life and I anticipate that its meetings, as the result of the papers read and the discussions thereon at its Triennial Meetings, as well as the personal contact, will be for the great good not only for the community of India but elsewhere.

Will you please convey my kindest regards to all those of your countrymen and women who will be able to attend.

PROFESSOR BLAIR-BELL, Foundation-President of the British College of Obstetricians and Gynaecologists and Professor of Obstetrics, Liverpool University :—

I am pleased to learn that an All-Indian Congress of Obstetricians and Gynaecologists is to be held in Madras on January 2nd, 1936.

I feel sure that such an excellent opportunity of securing co-operation, in the advancement of obstetrical and gynaecological teaching and practice in your country will not be lost.

All proper efforts to improve the status of the special branch of Medicine with which the Congress is concerned must elicit sympathetic approval.

I send my best wishes for the success of your meetings, and hope that they will provide inspiration for further endeavours.

PROF. R. W. JOHNSTONE, Professor of Obstetrics and Gynaecology in the University of Edinburgh :—

I am much interested to hear that you are holding an All-India Obstetrical and Gynaecological Congress at Madras in the New Year. I hope that it will be very successful because there are many problems, especially in Obstetrics, in regard to which the racial and other conditions in India introduce elements unfamiliar to us in this country, and which we are, therefore, not in a position to appreciate fully.

I have many old students in India and to them all, whether members of this Congress or not, I send a very cordial greeting for the New Year.

DR. M. I. BALFOUR, late of the Women's Medical Service, India :—

It gave me great pleasure to receive your letter and to hear of the first All-India Obstetrical and Gynaecological Congress. I have been so long and so intimately connected with the practice of obstetrics and gynaecology in India that I realise more than many can do what a great deal this Congress will mean for the women of India. By its means, knowledge and experience, which until recently, have been confined to a few, will become disseminated among many doctors. Suffering and mortality among women will be reduced and it is to be expected that the profession will take up more vigorously obstetrical research, especially as applied to the tropics and will prove pioneers in that promising, but still barren, field, which affects a large proportion of the world's population. I wish the Congress every success and hope it will be the first of many such Congresses.

DAME LOUIS McILROY, Prof. of Obstetrics and Gynaecology, Royal Free Hospital, London :—

I would be grateful if you would convey to the members of the Congress of Obstetrics and Gynaecology, which is to meet in India on 2nd January 1936, my warmest wishes and congratulations for this meeting. I am sure that it will have a widespread effect in disseminating the knowledge of modern methods and the most recent researches on the subject I welcome the co-operation of the obstetricians and gynaecologists of your great country and I am sure that the Congress will prove how much harmony there is among the scientific people who are interested in the welfare of your great nation.

The health of the mothers and children of a country, is of the utmost importance, and is at the root of all preventive work in public health.

I have noticed from time to time, many scientific and valuable papers published or referred to from India in the various Indian or British medical journals. I congratulate your country on their production.

There has been in our opinion here at home a very great advance in scientific observation and research in the direction of obstetrics especially and you have my warmest wishes for the furtherance of this splendid work among the men and women doctors in the various provinces of India. I wish you every success.

DR. J. S. FAIRBAIRN, past President of the British College of Obstetricians and Gynaecologists :—

I heard of the Congress you are to hold in Madras next month, when I with others of this College met a party of the Bombay Obstetrical and Gynaecological Society at the Wadia Maternity Hospital.

Remembering that we met at one of our Congresses, in Dublin was it not ? I am very glad to learn of your arranging to have periodical meetings of an All-India Congress on similar lines to our all-British one. I send you fraternal greetings and best wishes for its success.

Though I have now completed my term as President of the B. C. O. G, I will speak also on its behalf by saying that I feel all others besides those with me in Bombay would like to be associated with my greetings.

Please remember me kindly to Dr. Purandare, and any of the others of the Bombay Society we met.

Wishing you all success at your Meeting,

LT. COL. V. B. GREEN-ARMYTAGE, Retired Professor of Obstetrics of the University of Calcutta:—

It gave me enormous pleasure when I learned that there was to be an Obstetric and Gynaecological Congress for the first time in India.

Such a gathering of doctors devoted to this speciality cannot fail to have far reaching consequences, for each of you will carry back with you not only an increase of knowledge but a determination to help the women of India.

I only wish that I could be present at your deliberations, but as one who spent the happiest years of his life in India and 23 years in one hospital in Calcutta, it gives me no small pride to feel that I helped to awaken the public and medical conscience to the importance of things gynaecological and obstetrical in the East.

You have my very sincere wishes for a most successful Congress and I trust that this will be repeated triennially.

Messages wishing the Congress every success were also received from Col. Gow, Col. Hayes, Dr. Houlton and Dr. Jhirad.

THE SCIENTIFIC EXHIBITION.

A Scientific Exhibition of drugs, surgical appliances, instruments and furniture, pertaining especially to Obstetrics and Gynaecology, was also held in the Museum compound, where temporary *pandals* were put up for the purpose. The following firms participated in the exhibition.

1. Messrs. Schering-Kahlbaum (India), Ltd.
2. „ T. M. Thakore & Co. (Bombay)
3. „ Bole Bros. (Bombay)
4. „ Spencer & Co. (Madras.)
5. „ H. J. Foster & Co.
6. „ Carr & Co.
7. „ Dasai Gounder & Co. (Rep. Bengal Chemical Pharmaceutical Works).
8. „ Havero Trading Co. (Rep. Bayer Meister Lucius
9. „ May & Baker (Calcutta)
10. „ Parke, Davis & Co.
11. „ Ezra Bros. (Madras)
12. „ Hebbar Bros. (Madras)
13. „ The General Electric Co. of Bombay.

The exhibits were much appreciated by the delegates.

SCIENTIFIC SESSION

PROCEEDINGS

January 2nd—Afternoon (2 to 4-30 p.m.)

PAPERS.

ATONIC POST PARTUM HAEMORRHAGE.

By Dr. S. M. Trasi, M.B.C.M.

(Prof. of Obstetrics & Gynaecology, Medical College, Vizagapatam.)

In this paper I propose to deal chiefly with the treatment aspect of Atonic Post Partum Haemorrhage, which as it stands to-day, seems not quite satisfactory, especially in severe types In certain recent articles on the subject various measures were advised, in severe cases, including Hysterectomy as a last resource. They seemed to me either uncertain, or involved considerable disturbance of patients already weakend by severe blood loss, or need time and special skill or too drastic. In severe bleeding one cannot also waste time trying measure after measure, with the imminent risk of losing patients. An effective measure, easy enough for the general practitioner seems desirable. As I am concerned, only with treatment of Atonic Post Partum Haemorrhage, I shall first touch upon only a few other relevant points of interest before going on to treatment.

Frequency.—Post Partum Haemorrhage is said to be not frequent in the West. The Ten Teachers give it as ½-1 per cent. Mickulitz Radecki gives 3 per cent in midwives' cases in East Prussia. It is more frequent in the East. Wikrama Surya gives mortality alone 6 per cent in the D'Soysa Lying-in Hospital, Colombo, it must be higher in midwives' cases and frequency must be higher still therefore. This may be taken as applicable to India and the East generally in the absence of actual figures The stamina of Eastern mothers is evidently lower from various debilitating influences such as climate, dietery and hygienic deficiencies from poverty and squallor, closely repeated pregnancies, Tropical diseases especially chronic malaria and hookworm disease and general want of proper ante and intra partum care. Be the causes what they may, it is a serious emergency one has more often to face here. I must however mention that Taylor denies

atonic post partum haemorrhage and suggests that Atony is the result and not cause of the bleeding. During the discussion on his paper (Midland Obstetric and Gynaecological Society) the other members seemed undecided in their attitude towards his view. Whatever the relation between atony and bleeding it is certain that atony keeps up the bleeding and needs urgent attention, since it is good retraction that keeps bleeding within normal limits in and immediately after the 3rd stage in normal labour. This brings up the question of what is normal limits? It has been described as between ½ to 1 pint. But it is difficult to measure blood loss. Again what one patient may lose with little disturbance may be serious or fatal to another. It all depends on the patient's state of health. Therefore the only practical guide is its effect on the patient; whatever blood loss after child birth causes clinical disturbance is post partum haemorrhage and what does not is within normal limits for that patient.

Three Degrees.—Three degrees may be recognised clinically.

(1) *Mild blood loss is just over normal limits for the patient.*—Effect on pulse only—pulse frequent, soft, volume not markedly affected. Puerperal Bradycardia is a familiar term. 3rd stage pulse rate is below normal. This holds good relatively even in conditions associated with frequent pulse. Example.—Exhaustion from prolonged labour, fever, V. D. H., T. P., etc., in which 3rd stage pulse is lower than in 2nd stage in the absence of bleeding. Persistent 2nd stage terminal rate or higher in the 3rd stage means bleeding. Maternal pulse rate record also, along with foetal heart in 2nd stage is thus of importance for comparison.

(2) *Moderately Severe*—In this, pallor, tendency to coldness of limbs and subnormal temperature, hurried breathing, thirst are variously manifest, in addition to more marked effect on pulse which is fast, small and weak.

(3) *Very Severe*—Restlessness, air hunger, dim sight, blank vacant stare, leaden grey lips and face, ice cold limbs, thready, hardly felt running pulse, are prominent features, very fatal.

Nature of Bleeding.—Bleeding may occur immediately following birth of child, or after an interval. Placenta partly or completely detached; retained or expelled. Blood may be expelled now and again by feeble uterine contractions or as a steady leakage or sudden flooding or collection in the flabby yielding uterus distending it and raising the fundus above umbilicus On massaging and spueezing such a uterus a big clot or clots and a stream of blood are shot out and the patient may suddenly collapse This *concealed* Post Partum Haemorrhage is not sufficiently stressed in books.

Treatment.—I need refer to the various prophylactic measures about which there is no difference of opinion but only one or two controversial intra-partum measures

(1) Prophylactic Pituitrin just after child is born. It has been urged against it that it may cause hour-glass contraction. Records have been published of its extensive use thus without any such complication. On the other hand it has been highly praised as an aid to placental separation and prevention of post partum haemorrhage, by favouring good contraction and retraction. My experience is the same. As a curative it is useful in mild and moderate cases but fails in severe Atony. It merely flogs a jaded horse. What the uterus needs then is rest to recover tone just as in secondary inertia.

(2) 3rd Stage control of uterus Recent teaching is to leave uterus alone. Reason is placental separation begins with birth pain or one just after, with formation of retro-placental haematoma, which plays such an important part in its detachment. Tailor suggests the following sequence of events in hurried attempts at placental expression or even active uterine control : (1) Loss of the retro-placental haematoma, (2) bleeding from site of partial separation, (3) uterine Atony from anoxia, (4) rapid production of histamine and allied depressor substances from separated part of placenta, (5) their absorption through still attached part, (6) collapse. Be that as it may, I quite agree with leaving the uterus alone as has been my practice, the pulse giving ample enough warning of any bleeding.

Curative Treatment.—Mild and moderate cases do well on the usual measures with the following steps promptly carried out :—(1) massaging uterus, (2) emptying bladder, (3) expressing placenta and hot vaginal douche ; or extraction and hot uterine douche, (4) Pituitrin and Ergot. It is the *severe unresponding* cases that cause grave anxiety in which the uterus remains soft, flabby, contracts feebly on stimulation soon relaxes again, remaining soft, boggy, ill defined with occasional feeble contractions. Concealed bleeding may occur in such a flabby yielding uterus distending it, with resulting further bleeding and thus set up a vicious circle. Severe, even fatal bleeding may occur in such a flabby yielding uterus with hardly more than the usual diaper stain and is apt to be missed if attention is diverted, as in reviving an asphyxiated child or even otherwise, if pulse is not watched, the value of which as a warning for timely treatment cannot be over estimated in these cases. The outstanding feature here is a marked deficiency or failure of retraction, keeping up the bleeding Any measure applied, should (1) effectively control bleeding long enough till uterus recovers tone and can look after itself, (2) involve little disturbance to patient, (3) be easy to carry

out to be readily applicable by the general practitioner. A short rapid review of usually advised measures may not be out of place to see how far they fulfil these conditions.

(1) Aortic fist pressure, useful emergency measure; applicable immediately, secures prompt arrest of bleeding, kept up long enough, gives uterus time to recover and attendant to get ready for further treatment if needed. It has been urged against it that it is unreliable as the ovarian arteries arise above point of pressure In practice this theoretical objection does not count. I have watched pulse improve and patients revive under it. I remember an article in the *Practitioner* years ago highly praising it—a relay of students having been employed to maintain it for 3 hours or more in a hospital where it was tried in a number of cases successfully. But all cannot command this convenience. Carried out alone, it is fatiguing to attendant. Patients often resent it and do not co operate. It is difficult in fat or restless patients

(2) Manual compression of uterus against spine behind, objections same as above, also, a uncertain.

(3) Manual compression of uterus between vaginal fist and adbominal hand—efficient, but objections as above Also vaginal fist is a discomfort and disturbance to patient.

(4) Direct intra-uterine fist pressure on placental site. A barbarous anti-diluvian method, which unfortunately has not yet seen its last day as it richly deserves to. It is not only painful to patient, fatiguing to attendant, but inefficient with the risk of sepsis. A colleague of mine once described to me how blood continued to flow over his forearm as he was applying this measure in a patient, who died under the treatment.

(5) Duhressen's Uterine plug—Needs time and skill, painful, risk of sepsis, efficiently done adds shock from acute distension of uterus, inefficiently done acts as a wick and bleeding goes on through it. Stoeckel's figures show twice as high mortality with it, as without. Blacker records hysterectomy from its failure.

(6) Momburg's Tourniquet—Too painful and drastic. Like cutting off entire water supply from a large part of a town for a leaking tap in one house Carries danger to blood vessels, bowels, bladder and sudden rise of blood pressure with its danger in V.D H, arterio-sclerosis, etc. If loosened suddenly inadvertently sudden rush of blood to lower limbs with risk of collapse. Kept too long, risk of gangrene of legs.

(7) Hysterectomy—Too drastic and mutilating, needs time and skill. Advocacy of such drastic measures only serves to show how formidable and desperate this complication may be at times. One or two more recent measures may be referred to.

(8) Arent's extension of uterine arteries by traction on cervix—uncertain, difficult with soft lacerable cervix just after labour.

(9) Hankel's clamp compression of parametrium and uterine arteries—advantages claimed :—simple, quick, no risk of infection, no lochial retention, any lacerations not made worse, bleeding if it continues can be seen. The last cannot be an advantage as it means its failure. It is blind work requiring skill, it may fail to catch artery or tear it with local bleeding and haematoma, or damage bladder or ureter—as proved postmortem in a recent recorded case—also danger of necrosis of parametrium.

(10) Paul Salacz recently recommended ice cold douche after placental extraction as a stronger stimulus to uterus than hot, though he acknowledged that it draws off a substantial quantity of heat from an already exsanguined patient and recommended it only in *moderate* Atony with careful watch of its effects. Won't a hot douche do as well in *moderate* Atony without this drawback and the added advantage of supplying heat to the patient ? Ice is also not always easily available everywhere and more important, the sterility of such a douche cannot be guaranteed.

Now Atonic post partum haemorrhage is not arterial nor venous, nor capillary, but coming from sinuses of a flabby uterus, like parenchymatous bleeding—as from liver, spleen or cavernous tissue wounds The proper treatment would be to keep the uterine walls pressed together, on the principle of surgical treatment of parenchymatous bleeding, in which plugging is resorted to only where this cannot be done. In this connection I was agreeably surprised to find the following interesting note in the Ten Teachers about the vaginal fist and abdominal hand method. " In this way the posterior wall is pressed against the anterior and haemorrhage checked ; compression should be kept up till uterus has recovered contractility. This *however is trying* but is *absolutely efficient*, aseptic, leaves no foreign body in the uterus," and in italics they add, " In cases of severe flooding, should be performed as soon as placenta is removed, without wasting time on less *effective methods.* " Thus their opinion is that this is the best method Can the principle of this method be applied without much disturbance to patient, long enough till uterus recovers, yet leaving attendant free for restorative measures ? The following method has been eminently successful in my hands in the last nearly 20 years :—

(1) empty bladder, (2) massage uterus between hands in front and behind, (3) express placenta and clots by pressing uterus between the hands. Incidentally a placenta still in the upper segment is better expressed thus, as the uterus can be better squeezed between two hands, than with the thumb and fingers of Crede's method, which is better adapted for the placenta lying free or almost free in the lower segment Risk of inadvertently causing inversion of an atonic uterus is also eliminated. (4) Approximate lower (ulnar) edges of the hands under the uterus, raise, anteflex it against symphysis and front half of pelvis, (approximating ulnar edges below uterus before raising it prevents sucking air into uterus and risk of air embolism), (5) place a roll pad behind the uterus, and on the roll pad and around the uterus, enclosing it behind and at sides, place a horse shoe pad and apply a firm binder over all. These manœuvres can be rapidly and easily carried out through the relaxed abdominal wall just after labour.

Advantages.—(1) Effectively controls bleeding by keeping uterine walls pressed together between horse shoe pad behind and pelvis in front. (2) Closes uterine cavity against concealed bleeding and breaks vicious circle. (3) Restores intra abdominal pressure. (4) Pressing uterus bodily down, extends uterine arteries. (5) Roll pad exerts and keeps up some pressure on aorta restricting blood flow to parts below and with raised foot of bed and no pillow under head, maintains better blood supply to vital centres. (6) No intra-uterine manipulation and risk of sepsis or disturbance of patient or shock. (7) Not painful. (8) Leaves attendant free for restorative measures. (9) Can be left till uterus recovers even for 12 hours or more if necessary. (10) Easily applied at a moment's notice anywhere and no special appliance to carry about. It has repeatedly succeeded where Ergot, pituitrin and other measures failed and also when applied prophylactically immediately after expressing or extracting placenta and before appreciable bleeding occurred, in habitual bleeders with history of flooding, doubtful prognosis, and protracted recovery after intravenous, submammary, and rectal salines, etc., in previous pregnancies. All however cannot apply a binder well or strong stout safety pins are not available. A straps buckle binder with the straps as on trousers but having two diverging fingers at the base for even distribution of pressure obviates this difficulty. A small dose of morphia or omnopon afterwards promotes rest. In fat patients through whose thick abdominal walls the uterus cannot be easily manipulated, firm vaginal plug with a T bandage raises uterus within easy reach of abdominal manipulation and maintains counter pressure in front against the pads and binder behind with less shock and risk of infection than uterine plug.

MANUAL REMOVAL OF THE PLACENTA—A STUDY OF CASES FROM THE WADIA HOSPITAL, BOMBAY.

By B. N. Purandare, M.B.B S. (Bom.).

My object, in selecting this subject for the discussion to-day, is to prove the very high maternal mortality and morbidity rates following the operation of manual removal of the placenta. Even in these days, in spite of the opening of the antenatal centres and arrangements made for the booking of cases during the latter part of pregnancy one sees occasionally cases brought to the Hospital for either retained placenta or for post partum haemorrhage following the delivery conducted at home and after all possible manipulation done for the removal of the placenta. It will be seen from the discussion that its occurrence can to a some extent be avoided by taking sufficient care in the management of labour. To begin the subject I may just briefly refer to the natural mechanism of detatchment and expulsion of the placenta.

The placenta is a structure elaborated by Nature for the temporary service of providing nourishment and oxygen to the foetus while in the uterus. When that service is no longer wanted, there is a machanism set up by which it is readily separated and expelled. The master hand of Nature is discerned not only in effecting the datachment of the placenta but in elaborating it. First as soon as the ovum is discharged from the graafian follicle on ovulation, changes occur in the endometrium which increase in their extent on fertilization of the ovum, whereby a bed is formed, called the decidua, to receive it. This bed secures lodgement for the ovum and also provides nourishment. The latter is achieved first through individual villi but later on as the ovum grows in size, in the part where the ovum is attached, the villi increase in number and size, attach themselves more firmly, congregate in some parts so as to form into cotyledons, thus eventually leading to the formation of the placenta which is all ready by the third month From that time onwards it remains active and creates in the body an additional system of circulation, called the placental circulation. Nature's foresight and ingenuity are displayed not only in the development of the placenta but also in the separation of it. The datachment of the placenta is not by any means a sudden process but changes are gradually proceeding in the latter part of pregnancy to prepare it for its easy separation. The cavernous layer in which cleavage takes place at the time of birth is well formed by the seventh month. As the life of the placenta is short, being of nine months, towards the latter part, the placental arteries begin to manifest changes in their walls, exhibiting old-age. The syncytium also undergoes degeneration and becomes converted on it

fibrinoid substances. In this way infarcts are formed in the placenta which are to be seen in it at birth. The placenta is thus gradually prepared for its shedding.

Just as an ordinary fruit drops off a tree when it is ripe, so the placenta after the birth of the child is detached and cast out. But with all this, the mechanism by which the detachment is brought about is somewhat complex. In most of the cases, when marked retraction follows after the delivery of the child, the placenta during contraction gets detached in the middle, whereby the blood vessels of the part are broken, allowing blood to escape, which forms retroplacental clot. In the subsequent uterine contraction, the clot gets flattened by compression, increases in area and causes further separation of the placenta and more effusion of blood. In this way the placenta is completely detached and drops by its weight from the upper segment into the upper part of the birth-canal, whence it is expelled either naturally or by artificial aid. In some few cases the placenta, instead of separating in the centre, is detached at the lower part first and the detachment proceeds from below up. In the latter mode of separation, the loss of blood is more.

Despite all these Nature's arrangements the placenta is not cast out spontaneously in some cases and as a last resource, it has to be removed manually.

Dr. Pendse and I, working in Sir N. Wadia Maternity Hospital, as resident accoucheurs have collected statistics of the hospital from the year 1931 to 1935 June. It is as follows :—

The total number of confinements during that period was 20,000; out of these 112 cases required manual removal of the placenta thus giving a percentage of 0·56 per cent.

Out of the 112 cases, the manual removal was needed in 57 cases of labours and 55 of abortions occurring before the 28th week. This goes to prove that the placenta is prone to be retained so long as to entail its removal manually, as frequently after labour as after abortion.

The influence of parity is well illustrated from this statistics in that the occurrence is less common in the primipara than in multipara in whom the want of retraction, post partum hæmorrhage and the retention of placenta are the chief factors which necessitate its removal. The total of 112 cases comprises a greater proportion of the multipara which amounts as high as 84 while the primipara only 18. It clearly indicates that the uterus of the multipara has usually lost its tone and is unable to expel the placenta in time or gives rise to such a severe

hæmorrhage as to necessitate its removal without further loss of time. The former indication was found in 51·8 per cent of the cases while the latter, *i.e.*, the post partum hæmorrhage in 41 per cent. As a matter of fact sufficient time was allowed for the natural separation of the placenta for the average period of 3rd stage of labour was one hour, 4 minutes and 26 seconds and the maximum time in one case in which no post partum hæmorrhage was present being 5½ hours.

The mortality and morbidity following the operation is unfortunately very high indeed ; in fact no other surgical operation has got so high percentage of morbidity. The total number of deaths was 22 thus giving a percentage of 9·69 per cent a figure 3½ times the total mortality rate of the hospital (2·2). Of these 11 died immediately after the removal of the placenta either from shock arising from the manipulations or from great loss of blood that had already taken place before its removal. The remaining 11 cases died some days after from sepsis.

The mortality rate is higher after labour than after abortion, being 68 per cent in the former, while 31 per cent in the latter. Parity does not seem to have any influence on the occurrence of mortality.

Now as regards the occurrence of sepsis, again the outlook is exceedingly sad. According to the Department of Health standard which takes any rise of temperature above 100·5 during the peurperium as the septic condition, 64 cases became septic thus giving a percentage of 57·1 per cent. It therefore clearly shows the great danger of manual removal which should not therefore be lightly undertaken.

Now as regards the relation of sepsis to parity it is really interesting to know that the occurrence of sepsis is more common in the primipara than the multipara. About 66 per cent of the primipara and 55 per cent of the multipara went septic. This can very well be explained by the exhausion, acidosis and the general lowering of vitality that follows the prolonged labours of the primiparas. This fact is further supported by the majority of primiparas which became septic were either at full term or over 28th week, while only a solitary incidence is seen of septic abortion. This may be due to the severity of trauma to the mother's soft parts during the manipulation, and partly due to the up and down movement of the foetal head during the 2nd stage of protracted labour. The effect of the latter is to produce a suction action on the lower vaginal content which may reach the upper part of the birth canal and will be further taken up to the placental site by the introduction of the hand for intra-uterine manipulation.

By the by, I may now refer to the two methods suggested which will be really useful to reduce the incidence of sepsis and will deserve

the trial. The first is the one mentioned by Munro Kerr, of working from inside the amniotic sac thereby invaginating the membranes under the margins of the placenta by the sweeping movements of the hand. There are two main objections to its use. Firstly in the case of the adherent placenta, the membrances will also resist their separation and it won't be possible to invaginate them so easily. Secondly, supposing if the membranes have separated they will be lying in the vagina as they very often do and being contaminated would be a source of sepsis as they will be rubbed against the raw placental site. In the case of the post partum haemorrhage with partial separation of the placenta, the membrane may have been completely separated. Then this method would be possible. The second method is that of injecting the umbilical vein with sterile normal saline. Unlike the first method this method should be useful in the case of adherent placenta as it will be acting in the same way as the retroplacental haematoma and increasing the tension in the placental sinuses. But this method will not be so useful in the case of the post partum haemorrhage in which there is every chance of the saline trickling down the vagina by the side of the partially separated membrane along with the blood.

I am sorry I am not able to supply you with the percentage figures indicating the advantages and disadvantages of Munro Kerr's method as in no case in the 112 cases that we had searched out was this method employed.

Now the question arises. Is there any way by which this risky operation can be anticipated (during the antenatal examinations) and measures undertaken to avoid its occurrence? In the case of multipara the history of severe post partum haemorrhage and of the necessity of internal manipulation may help a good deal But one striking feature of the 57 cases of labour in which placenta had to be removed manually is that in 39 cases the labour was normal while in remaining 18 cases it was difficult. Thus it clearly demonstrates that a normal labour, especially if the 3rd stage is badly managed, may call for the manual removal and the fact, that the patient giving the history of previous normal labour should not be an excuse of the neglect or the improper management of the 3rd stage.

It may be mentioned here that the retention of the placenta has been always looked upon as a very grave event and even in the olden days many devices were adopted for its removal. Some of these are given in the book "Posture and practices during labour among the primitive people"—illustrations 90—92. They are more or less crude ways of Crede's method of expression of the placenta.

The abnormal conditions of the patient occurring during pregnancy *e.g.*, oedema, albuminuria, high blood pressure anaemia, do in no way indicate beforehand the necessity of the manual removal. For, out of 112 cases taken above 84 of them had normal pregnancy while the remaining 28 showed one of these or various combination of the signs during pregnancy. But one fact must no doubt be admitted, that out of those abnormal cases, 4 cases with anaemia and albuminuria, had a fatal result following the operation.

Conclusions.—(1) Manual removal of the placenta is not infrequently needed even in the delivery of a healthy pregnant woman and after a normal labour

(2) It is attended with grave risk of immediate death from shock due to manipulations or death some days after, from sepsis.

(3) Sepsis may follow after labour, as well as after abortion.

(4) There is greater incidence of sepsis in primipara than in multipara, if manual removal is required after the 28th week.

(5) The proper management of the 3rd stage of labour is far more important.

(6) Abnormal conditions of pregnancy especially the anaemia of pregnancy should be well attended to during the antenatal supervisions.

Manual Removal of Placenta—Report of 112 Cases.

Total number of confinements in four years and a half, from 1931 to 1935 June, 20,000.

I.	Total number of cases	...	...	112
	(*a*) Full term cases	...	35	31·5%
	(*b*) Premature	...	22	19·8%
	(*c*) Abortion	...	55	49·5%
I-A.	(*a*) Primiparas	...	18	...
	(*b*) Multiparas	...	94	...
II.	*Sepsis*:			
	(*a*) Septic Cases	...	64	57·1%
	(*b*) Non-septic cases	...	48	42·9%
III.	*Septic Cases*	...	...	64
	(*a*) Mild Sepsis	...	42	37·5%
	(*b*) Severe Sepsis	...	22	17·5%

(*a*) *Mild Sepsis*

(i) Abortions	Primipara ...	...	1
	Multipara ...	...	20
(ii) After 28 Weeks	Primipara ...	...	4
	Multipara ...	...	17

(*b*) *Severe Sepsis:*

(i) Abortions	Primipara ...	...	Nil.
	Multipara ...	...	9
(ii) After 28 Weeks	Primipara ...	...	7
	Multipara ...	...	6

IV. *Non-septic Cases*

(i) Before 28 Weeks	Primipara ...	...	2
	Multipara ...	...	21
(ii) After 28 Weeks	Primipara ...	...	4
	Multipara ...	...	21

V *Mortality*

(*a*) Total number of deaths	...	22	9·69%
(*b*) Deaths before 28 Weeks	Primipara ...	Nil.	...
	Multipara ...	7	31·8%
(*c*) Deaths after 28 Weeks	Primipara ...	5	68·2%
	Multipara ...	10	
(*d*) Deaths immediately after operation	...	11	50%
(*e*) Deaths some days afterwards from Sepsis	...	11	50%

VI. *Indications for Manual Removal of Placenta.*

(*a*) P. P. H. or Bleeding	...	46	41%
(*b*) Retention of Placenta	...	58	51·8%
(*c*) Unknown causes	...	8	7·2%

(*d*) *How much time after labour or abortion.*

In 106 cases	Minimum	0	Hrs.	6	Mts.	0	Secs.
	Average	1	,,	38	,,	50	,,
	Maximum	20	,,	0	,,	0	,,

(*e*) Time not known 6 cases

VII. *How much time after labour in cases after 28 weeks :*

Total number of cases after 28 weeks 57

(*a*) In 56 cases	Minimum	0	Hrs.	6	Mts.	0	Secs.
	Average	1	,,	4	,,	26	,,
	Maximum	5	,,	30	,,	0	,,

(*b*) In one case time is not known

VIII. Total number of cases after 28 weeks 57

(*a*) Cases with normal labour	...	39	68·43%
(*b*) Cases with difficult labour	...	18	31·57%

IX. *Condition of the patient during pregnancy.*

1.	Normal	...	84
2.	Oedema	...	4
3.	Albumin	...	7
4.	Oedema and albuminuria	...	1
5.	Albumin and high blood pressure	...	1
6.	Oedema, albumin, and high blood pressure	...	1
7.	Anaemia and oedema	...	4
8.	Fever	...	6
9.	Acute Abdomen —Salpingitis	...	1
10.	Dysentery	...	3
	Total	...	112

THE PATHOLOGY OF WHITE INFARCTIONS OF THE PLACENTA.

By T. Bhaskara Menon, M.D., M.R.C.P. and H. Vittal Rau, M.B B.S., D.G.O.

Introduction.—An examination of a series of placentas from apparently normal cases very often reveals the presence of small whitish areas both under the amnion and on the maternal surface Occasionally, larger masses are met with extending deep down into the organ. Various names have been applied to this condition, since the exact nature of the underlying process has been obscure. Ackarmann (1884) called it ' white infarction ' since he believed that the condition was the result of arterial obstruction. ' White necrosis ' was the name subse-

quently applied by Clemenz (1922). The studies of Eden (1897) and of Williams (1900) led to the view that vascular occlusion of the vessels was present and was the essence of the change. Others have held that the maternal vessels are occluded and some have blamed the chorionic epithelium. However, the term ' white infarct ' of the placenta has come into use and many modern writers go even a step further and derive these white infarctions from old red infarctions which are red hæmorrhagic areas that are occasionally met with. Williams (*loc. cit*) traces the beginnings of the infarct to endarteritis of the placental vessels though it is not clear how the endarteritis is brought about. The first change is believed to occur in layer just beneath the syncytium where the original Langhan's cells have atrophied and disappeared in the mature placenta. This rudimentary layer is replaced by a tissue resembling fibrin 'Nitabuch's layer' (1887) which shows irregular canals or spaces. This is believed to be a degenerative change which occurs wherever fœtal and maternal tissues are brought into contact, as for instance where the chorion levæ fuses with the decidua basalis The syncytium is not affected since it is supplied by the maternal blood. Williams argues that as a result of a progressive diminution in the arterial circulation the villus gradually undergoes necrosis On the necrotic tissue, fibrin is deposited and the blood coagulates and the whole tissue becomes converted into a dead mass.

Though a necrotic process is the end result of the change, to a pathologist, this explanation has not been satisfying. In order to study this condition we have therefore made a histological examination of a series of placentas from normal and abnormal cases. This was only part of a larger investigation on placental disease that was started in the research department of the Women and Children Hospital, Egmore, in 1932 under the direction of Dr. Lakshmanasamy Mudaliar. 513 placentas, both normal and abnormal were examined histologically. Out of these, 84 showed gross infarctions. It was found that microscopic examination was often deceptive as regards the changes in the underlying tissue. Slight changes such as a concentric development of fibrous tissue round the vessel and a gradual thickening of the wall indicating an involutionary type of endarteritis was found to be very common in mature placentas at term, but only a few showed well marked encroachment of the lumen. Out of these 513 placentas where details are complete, marked endarteritis was found in 25 cases. Of these only one showed an associated gross infarct. Endarteritis of the vessels was in some cases accompanied by an atrophy of the villi. No definite relation could be traced between the degree of endarteritis and infarction in the series of cases.

The histopathology.—The first change in the so called placental ' infarct ' appeared in the remnants of Langhan's layer just below the

syncytium. This consisted in the infiltration of a substance which gave the staining reactions of keratin rather than fibrin. The staining was not uniform but denser in some places than others. Irregular slits appeared in the layer. These seemed to be nuclear areas of the original Langhan's layer. Under the high power the material appeared in granular compressed hyaline masses which however did not give the staining reactions of hyaline. It was also quite unlike the threads of fibrin met with in blood clots and in inflammatory tissue. The resemblance was to keratin of keratinised epithelium where the cell nuclei had disappeared, but had left empty spaces. In some cases the nuclei reappeared and occasionally showed hyperchromasia. This was most marked in the trophoblastic islands of tissue where vascular capillary formation had not yet taken place Side by side with such changes affecting the remnants of Langhan's layer the syncytial cells showed degenerative swelling and desquamation. Some were cast off while others showed adhesion to neighbouring villi after the manner of glomeruli in nephritis With adhesions between villi larger areas of tissue underwent this peculiar type of keratinoid change; they became fused together by granular material While these changes were going on outside the villus, the capillary tuft inside the villus showed a regressive change; the capillaries gradually disappeared while their place was taken up by a tissue resembling the primitive mesoblastic tissue from which the capillaries develop during the early months of foetal life. The whole change inside the villus would thus appear to be a de-differentiation, a reversal of the normal process of development. This change is quite in keeping with the cessation of function of an organ which is no longer required by the foetus. The beginnings of this change, the beginnings of a placental 'infarct' could thus be made out at term in almost every placenta we have examined, in isolated villi here and there. It was possible to note the spread of the process, as it involved more and more villi from the normal healthy placenta to the so called placental 'infarct' where the villi were fused together until they lost their structure. With degeneration of the syncytium a modified process of coagulation of blood took place in the intervillous spaces by the deposit of blood platelets, fibrin and red blood cells. This could only be regarded as a secondary process of thrombosis round a dead mass in the circulation. Calcification of the villi was a subsequent change occurring both in the degenerate syncytial masses and in the keratinoid layer below and sometimes spreading to involve the whole villus.

Discussion.—The primary change in the placenta would thus appear to be quite different from the ordinary process of infarction as it appears in any other organ. A gradual occlusion of a blood vessel results in atrophy and a replacement fibrosis. Pathologically an infarct is the result of sudden closure of an end artery and not of a gradual

obliterative occlusion. In a vascular organ like the placenta the effect of a sudden occlusion would be a haemorrhagic infarct. Yet red infarctions of the placenta are decidedly rare and the process itself appears different A zone of reactive hyperaemia and another of leucocytic infiltration are common in an ordinary infarct, but these are rarely found in a placental 'infarct'. It seems to us that the change which occurs in the placenta at term can only be compared to changes that occur in an organ which has fulfilled its physiological function. It cannot however be regarded as a simple senile change. These studies tend to show that the essence of the process is a de-differentiation followed by necrosis. The beginnings are met with in every placenta at term and the occasional white masses of necrosis are really exaggerations of the normal. It is difficult to draw the line between the normal and the abnormal, between the commencement of the change in the normal placental villus and the gross placental infarct. It is easy to realise from anatomical arrangement of the villus that some alteration in the syncytium and the underlying layer can bring about an upset of the forces of filtration and selective absorption. In fact, these are changes that are found. It is well known that some stimulus in the maternal blood is responsible for the commencement of labour. On the same argument, it is possible to theorize that changes in the maternal blood may bring about alteration in the permeability of the syncytium. The alteration in Langhan's layer would certainly interfere with the filter. The whole arrangement of the circulation through the villus is to bring the villar capillaries into contact with the maternal blood through the syncytium. The simple flat endothelium that lines these capillaries cannot be assumed to have any secretory or selective function. The structure of the syncytium shows that this is the all important factor. If we study the conditions that obtain in the gross placental infarct, it seems probable that some change in the maternal blood is responsible for this exaggeration of the normal. Recent studies tend to show that gross infarctions are often associated with albuminuria of the mother. The investigations of Ebstien have taught us that prolonged albuminuria is attended by alteration in the colloidal osmotic tension of the blood and that such conditions alter capillary permeability. In the nephrosis of pregnancy such alterations no doubt exist. It is also certain that albuminuria is due to toxic factors in the blood that interfere with the delicate ultrafilter of the kidney. It seems therefore natural to assume that another filter might also be damaged, a filter that is very similar in structure if not in function to the glomerular filter of the kidney.

Summary.—The process described as infarction of the placenta has its beginnings in all normal placentas at term. During the change, the villus often shows a reversal of the process of development followed eventually by a disappearance of the capillary plexus and ending in

death of the tissue and sometimes calcification. A theory is advanced that the changes which occur are due to alteration in the permeability and absorbtive powers of the syncytium which are due to changes in the maternal blood. Histological changes in the syncytium and in the underlying Langhan's layer can be demonstrated quite early in this condition. The observation that gross infarctions are associated with albuminuria in the mother is of some significance with regard to this view.

Acknowledgment.—In conclusion we must acknowledge that this investigation was done on the initiative and under the direction of Dr. A. L. Mudaliar, M D., F.C.O.G., to whom our grateful thanks are due.

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RETAINED AND ADHERENT PLACENTA WITH AN ANALYSIS OF FIVE YEARS' STATISTICS OF THE WOMEN AND CHILDREN'S HOSPITAL, MADRAS.

By Dr. M. B PRABHU, M D. (Mad.), M.R C.P. (Ed.), M.M. (Lond.)

There are two varieties, the retained placenta and the adherent placenta. In the former, the placenta has separated from the uterine wall, but has been retained in the lower uterine segment. The upper uterine segment perches on the top of the lower. In this type, grasping the fundus and pressing it down will lengthen the cord, but on releasing the pressure, the cord does not recede.

Causation.—The most common cause that I know of is retention of urine and a distended bladder. On emptying the bladder, the placenta is expressed easily.

Another cause is hour-glass contraction of the uterus, as a result of administration of ergot after birth of the child, but before expulsion of the placenta.

Injudicious attempts to express the placenta before giving enough time for it to separate, may cause irregular contractions and cause the placenta to be retained.

There are cases where rupture uterus has caused retention of the placenta In fact, the retention led to a further investigation when rupture was noticed.

Then there are cases where placenta cannot be expressed even after a fair amount of time has elapsed for the placenta to separate. By fundal pressure, the cord seems to descend, but on releasing the pressure, it recedes. Vigorous attempts only tend to push the uterus down, the cervix appearing at the outlet.

The causes for this condition are :—

1. Imperfect development of decidua basalis. Normally the decidua at term consists of three layers, deep compact layer, intermediate spongy layer, and superficial compact layer. It is through the spongy layer which is compared to the perforated area of the postage stamp, that separation takes place. If, due to any cause, this spongy layer is not properly developed, separation will be difficult. The growth of decidua is governed by corpus luteum. Could abnormal function of corpus luteum give rise to this faulty development ?

2. If the placenta is larger, there is greater area of attachment and the placenta is thinner. Hence, twin placenta, and placents membranacea may predispose to adhesion.

3. Inflammation of endometrium gives rise to imperfect development and increase in fibrous tissue ; hence greater adhesions between placenta and uterine wall. This seems the most possible cause.

4. Muscular action of the uterine wall is inhibited by exhaustion, fibroids, or over-distension as in hydramnios Contraction and retraction of placental site is essential for placental separation and where this is interfered with, placenta will be adherent.

5. Low implantation of placenta.

6. Premature delivery—the decidua basalis is not fully developed

7. Placenta succenturiata.

8. Previous operative scar—one of our cases had a previous Caesarean section.

Dangers that may result from adherent placenta are :—

1. Hæmorrhage.
2. Sepsis.
3. Subinvolution.
4. Shock.

Treatment.—If there is hæmorrhage, the placenta must come out immediately because no efficient contraction and retraction are possible with the placenta, adherent to the uterine wall. The bladder should be emptied and an attempt must be made to express it by the abdominal route, failing which it should be removed manually under proper aseptic precautions.

If there is no haemorrhage, when should the placenta be removed? Should one wait for an hour, two hours or more? The longer the placenta is in the uterus, the greater is the chance of sepsis. Apart from this, there is one other factor to which sufficient attention has not been devoted. It is the question of shock. Textbooks hardly make any mention about this. In certain cases of adherent placenta, where there is no bleeding and the patient is allowed to go on for some time, in the hope the placenta may ultimately separate, the patient suffers from increasing shock, inspite of restoratives and occasionally may end fatally. It so happens that this condition of shock is present and sometimes in marked degree, in some cases; whereas, in others, it is hardly noticeable. What are the factors that cause shock in these cases? Are any histamine-like products elaborated in the placenta? This is the problem that requires further elucidation. Here are a few illustrative cases from the Government Hospital for Women and Children, Madras :—

(1) IV para, natural delivery 2-30 a. m. Condition after delivery good. M.P. 78, no haemorrhage. At 9-30 a.m. 7 hours later, condition bad, M.P. 140. Manual removal of placenta—submammary saline etc. Patient eventually recovered.

(2) I para, delivered naturally at 11-15 a.m., M. P. 86, no haemorrhage. At 12-10 p.m., 1 hour later, pulse rapid. placenta could not be expressed—removed manually.

(3) III para, natural delivery, condition fair, no haemorrhage. Condition steadily worse inspite of restoratives, died 5½ hours later undelivered.

In contrast to this, there are two cases where the adherent placenta caused no shock :—

(1) I para, general condition fair, confined at 3-45 a.m., goop pulse 106 ; 10-30 a. m., *i. e.*, 7 hours later, good pulse, 104. Placenta manually removed—puerperium normal.

(2) II para, condition good, breech delivery. 5-12 p m., pulse 112, good. 8-15 p m., *i.e.*, 3 hours later pulse 116, good. Manual removal of placenta. Normal puerperium.

Therefore, when there is no haemorrhage, the patient's condition must be carefully watched. The pulse and blood pressure to be noted and if they are satisfactory, the case may be left alone for about an hour and then an attempt must be made to express it by Crede's method, failing which, the attempt may be repeated under anaesthesia. If this is not successful, the placenta should be removed manually. Injection of saline into the umbilical vein is one of the methods advocated. It is simple in technique and if successful, is better than than any intra-uterine manipulation.

Rarely the placenta is so adherent that it cannot be removed even piecemeal : placenta increta. Operation of hysterectomy will have to be considered.

I shall now present you an analysis of 68 cases treated in the Government Hospital for Women and Children, from 1929 to 1933, for a period of five years.

Total number of cases	68
Placenta expressed	5
Undelivered	6
Manual removal	57

Parity.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.
No. of cases.	24	8	4	9	4	5	3	3	4	3	-	1

Age.

Age.	16-20.	21-25.	26-30.	31-35.	36-40.	41-45.
No. of cases	10	14	18	16	8	2

Indication :

P. P. H.	23
Hour-glass contraction...	2
Adherent placenta	43
Total ...	68

Mode of Delivery.

Natural	58
Forceps	6
Breech	1
Internal podalic version	3

General condition of patient.

Not available	11
V. D. H.	1
Anæmia	20
Albuminuria	2
Poor	1
Good	33
Total	68

Cause of Death.

P. P. H.	6
Shock	7
Shock and sepsis	3
Admitted moribund	2
Total	18
Discharged otherwise in a bad condition	1
Corrected mortality	17 cases or 25 %

London Committee on Puerperal Sepsis	30 per cent.
Queen Charlotte's	1·8 per cent.

Conclusion.

1. The role of shock in adherent placenta requires further study. In some cases it is marked; in others it is absent.

2. Blood pressure and pulse rate must be the guide to ascertain the optimum time to remove an adherent placenta in cases where there is no hæmorrhage.

3. An analysis of our cases reveals:

(*a*) The large percentage of natural deliveries where this complication arises.

(*b*) The frequent incidence of anæmia in our cases.

(*c*) The larger number of deaths due to shock and hæmorrhage than sepsis.

THE CAUSES AND TREATMENT OF RETAINED PLACENTA.

By Dr. D. M. Satur M.B., F.R.C.S.E.

When the natural expulsion of the placenta is delayed or prevented, the condition is known as one of retained placenta. The normal duration of the 3rd stage of labour is from 20 minutes to ½ an hour, but a margin of an hour may be allowed before classifying a case in this category.

There are two distinct stages in the normal delivery of the placenta. In the first, the placenta is separated from the uterine wall by the power of contraction and retraction of the uterine muscle. The second part consists in the expulsion of the separated placenta from the uterus into the vagina or to the exterior. The forces that come into play here are the uterine contractions helped largely by the contraction of the accessory muscles of labour. More often than not however, the expulsion of the placenta from the vagina is aided by the artificial method of expression, as delivery by natural efforts alone is too tedious a process and keeps the patient longer from the rest she so urgently needs.

Under the term retained placenta are included the following varieties :—

(1) Simple retention, in which the placenta has separated from the uterus, but has not been expelled.

(2) Simple non-separation, where the whole or part of the placenta remains in organic union with the uterine wall, a line of cleavage however existing between the two, into which the fingers could be insinuated when manual removal is attempted.

(3) The morbidly adherent placenta, or Placenta Accreta as it is otherwise called, in which there is no line of cleavage between the uterus and placenta, the muscles of the uterus being eroded by the trophoblast and penetrated by the fastening villi.

It is often very difficult to distinguish between these various types of retained placenta, and it is only when manual removal is attempted that the diagnosis is made. As a safe working rule however, we may say that the placenta belongs to the first type or less severe from of the second, if it could be expressed without much difficulty after waiting for the normal period of expulsion. Placenta Accreta or simple non-separation may be considered when there is no

haemorrhage in the 3rd stage. In simple retained placenta, spasmodic uterine haemorrhage occurs.

I shall now make a brief survey of the causes of each variety, illustrating my remarks from a series of 70 cases of retained placenta treated in the Government Victoria Caste and Gosha Hospital, Madras, over a period of five years.

Simple Retention.

(1) Uterine inertia, or failure of the secondary powers from over-fatigue or collapse of the patient. In favour of this view is the fact that in the series of cases I have mentioned, 72 per cent were found to occur in multipara in whom a certain degree of uterine inertia may be said to exist.

(2) Mechanical impediments such as a full bladder and rectum. These may also act by preventing proper retraction of the uterine muscle, so essential for placental separation and expulsion.

(3) The formation of a contraction ring below the placenta: this was found to have been the cause of retention in 6 per cent of the series of causes under my observation.

(4) Placental abnormalities, *i.e.*, placenta membranacea. The placenta is so large and so thinned out that it covers nearly the entire internal surface of the uterus. Datachment and expulsion are rendered difficult as the placenta just crumples up when the uterus contracts. I have not met with a case of placenta membranacea giving rise to retention, though the explanation sounds reasonable.

In this category may be mentioned Placenta Succenturiata, in which the accessory lobes, being small, may be easily retained and missed if the expelled portion is not examined thoroughly.

(5) Placenta Prævia has been put forward as a cause of retention, owing to the imperfect power of contraction and retracr tion of the lower uterine segment I have not howeve-come across such a case. On the contrary, wherever placenta prævia existed, the placenta was so much detached that its expulsion was co-incident with the birth of the child if not prior to it. How far this may apply to lateral placenta prævia I am unable to say.

(6) Abnormalities in uterine musculature from the presence of fibroids, fibrosis, etc., may result in imperfect uterine action, and so favour retention of the placenta. I have not however met with such an instance.

Let us now consider *Simple Non-detachment.* Here as mentioned before, the placenta is partly or wholly in organic union with the uterus, no abnormality may be present in the attachments, failure to completely separate being due to faulty uterine contraction and retraction. The same agencies that give rise to simple retention may operate here also, resulting in imperfect uterine action. On the other hand the placental attachments may be unusually firm, and the normal process of separation cannot take place or is incomplete. Such are the cases which usually end in manual removal. The cause of the condition is not well understood, but is generally attributed to an antecedent decidual endometritis. It may be suspected in patients who have had previous manual removals of the placenta, frequent curettage and endometritis. Bethel Solomons goes so far as to state that an adherent placenta will not occur in a primipara and that when it occurs, the diagnosis must be wrong, or there may have been a previous abortion. In my series of cases 70 per cent occurred in multipara.

I feel convinced that *toxæmia* to a certain extent plays a part in the non-detachment of placentæ, since 45 per cent of my cases to a greater or less extent showed albuminuria and a raised blood pressure, some even being eclamptic. The effect of the toxæmia on the decidua may be such as to render it necessary for the trophoblast to bury itself deeper in order to get a firm nidus and enable the pregnancy to continue.

I have also observed that in 25 per cent of my series of cases, labour had been premature or a miscarriage had taken place. Why in these cases the placenta should sometimes be adherent, is not well understood. I am inclined to attribute it to the effect of Pituitrin on the uterine muscle being less in the earlier months of pregnancy than at full term owing to the persistence of the Corpus Luteum. This would result in inefficient contraction and retraction of the uterine muscle, leading sometimes to adherent placenta. It is an understood fact that the secretion of the corpus luteum renders the uterine muscle fibres antagonistic to the action of pituitary extract, and that the onset of labour is caused by retrogression of the corpus luteum with consequent hypersensitiveness of the uterine muscle to the action of pituitrin.

Placenta Accreta.—True Placenta Accreta is fortunately very rare. The prognosis is very bad and mortality rate high, due to failure to

recognise the condition till late. No satisfactory explanation has yet been made for the condition. There is an entire absence of decidua basalis and the chorionic elements are intertwined with the muscles of the uterine wall, leaving no line of cleavage between the two. Hence it was thought that it was due to a pre-existing inflammatory condition of the endometrium or to damage of the uterine mucosa as a result of previous operations This would result in a deficiency of the decidua basalis which is so necessary to protect the uterine muscle from excessive trophoblastic action.

Management of Retained Placenta

1. Prophylaxis consists in not allowing the uterus to become tired out during the 2nd stage of labour, and in not mismanaging the 3rd stage. As long as the patient is not bleeding and the uterus remains retracted, allow plenty of time for the placenta to separate and don't interfere with the uterus by irregularly massaging it, a procedure which may only lead to the formation of a contraction ring.

2. *Treatment.*—The line of treatment of retained placenta depends largely on whether haemorrhage is present or not. If there is no haemorrhage, the placenta must still be attached to the uterus, and expectant treatment is best, provided the mother's condition is good. The case should not be considered abnormal until at least one hour has elapsed since delivery of the child I hold that, provided the mother's condition is good, one may wait as long as 4 to 6 hours before attempting removal. The cord may be ligatured and cut close to the vulva, a sterile pad applied, and the patient made as comfortable as possible, watch being kept for signs of haemorrhage. The advantages of such a procedure are many :—

(1) The patient is not disturbed and worried by constant massage and stimulation of the uterus in efforts to express the placenta

(2) If she is suffering from uterine inertia, the rest helps her to recover her uterine tone and spontaneous separation of the placenta may occur, whereas immediate removal may result in profuse post partum haemorrhage.

(3) The long interval may be instrumental in relaxing the spasm of a contraction ring if present.

If at the end of this period the placenta is still not expelled or cannot be expressed, then most likely it is adherent, and will have to be manually removed.

The only exception to the above line of treatment is when the patient is very shocked, which she very often is even if there has been no bleeding The cause of the severe shock in some of these cases of retained placenta has not been determined, some authorities believing that it is due to the actual retention; others that it is an antecedent condition, responsible for the retention. I am inclined to favour the view that it is due to the actual retention and explain the shock as due to toxæmia from the placenta. It is possible that the toxins may arise from the autolytic degeneration of the placenta, portions of which may have been separated by retroplacental clots and undergone autolytic digestion with the formation of toxic protein cleavage products. These, absorbed into the maternal blood, would give rise to the shock.

When therefore the patient is shocked, and we find that the shock is increasing in spite of appropriate remedies and non-interference with the placenta, the best course is to do a manual removal and lessen her chances of toxæmia from the placenta.

When the placenta is retained and the patient bleeding, the object of treatment should be to empty the uterus as quickly as possible. Empty the bladder, and try to get the uterus to contract by rubbing the fundus, and express the placenta by Crede's method. A preliminary injection of ½ c c. pituitrin often helps by causing uterine contraction and separation of the placenta, while at the same time the hæmorrhage is checked. It is also a good temporary measure while getting ready for manual removal. In 7 per cent of our cases with retained placenta and hæmorrhage it was possible to express the placenta after as injection of pituitrin without resorting to manual removal.

The hydraulic mothod of treatment for retained placenta has been advocated by some authorities before deciding on a manual removal. It consists in the injection of 100 to 200 c.c normal saline into the umbilical vein of the cut cord; the fluid thus introduced is thought to find its way into the intervillous spaces, gradually separating the placental villi from the underlying decidua basalis In practice, however, this method has not been successful and every case in which it was adopted had eventually to have a manual removal.

A word about manual removal of the placenta. It is an operation fraught with so much danger of immediate shock, or if this is survived, of puerperal sepis, that it must not be undertaken unless absolutely necessary and all other methods have failed; and then only with the utmost aseptic precautions and after the appropriate treatment for shock. Among the cases under our treatment at the Government Victoria

Hospital, 67 had a stormy puerperium, while the maternal mortality was 15 per cent. For the efficient carrying out of the operation and to lessen the amount of the shock caused by the introduction of the hand into the uterus, the patient must be well under chloroform. If a contraction ring is suspected or diagnosed, an injection of morphia and atropine should also be given to release the spasm. After the operation, the uterine cavity should be swabbed with some antiseptic such as acriflavine and glycerine, or Dettol. An injection of ½ c c. pituitrin will help in staving off P. P. H.

Regarding the treatment of placenta accreta, I have little to say as I have never met with a case. As however there is no line of cleavage, and attempts at manual removal may only result in perforation of the uterus, the only feasible treatment, and one which all are agreed upon, is hysterectomy.

DISCUSSION.

(On papers read in the afternoon.)

Dr. Venkatagiri (*Madras*)—He said that in many cases of postpartum haemorrhage, the obstetrician was called in very late, when the patient was actually dying and nothing could be done. Transfusion of blood was not done in Madras to any appreciable extent and he doubted if it was of any good in those cases of shock. He had never encountered hour-glass contraction of uterus after pituitrin injection. He thought that hot irrigation of the uterus was dangerous. He cited a case where the placenta was retained in utero for six days and then removed manually, with no ill effects to the mother. He was of opinion that a distended bladder could not be a cause of retention of placenta. He said that the uterus which was strong enough to expel the foetus in the presence of that distended bladder, would not fail to expel the placenta.

Dr. Subodh Mitra (*Calcutta*).—He quoted 8 per cent mortality in 83 cases of placenta praevia in his hospital from 1929 to 1933, and 22 per cent mortality in 55 cases of retained placenta in five years. Though it is said that it is criminal to let a patient die of bleeding in this 20th century, he thought that there arose some case now and then where nothing would save the patient. Calcutta was not doing much blood transfusion. He then spoke about three of his cases which had the placenta retained for days and were subsequently expelled or removed with no serious complications.

He had seen 4 cases of placenta accreta with 2 deaths. He preferred manual removal of the placenta piece-meal to hysterectomy, which was being recently advocated.

Dr. A. L. Mudaliar (*Madras*).—He sympathised with the general practitioner who gets confused by the difference of opinion expressed by experts. The treatment suggested should be such as could be carried out even in the remotest of villages. He was against hysterectomy, clamping of uterine arteries with special clamps and other large operative techniques. He stressed the great importance of the correct application of Crede's method. To get the uterus to contract by massaging it, was an essential preliminary. A distended bladder was undoubtedly an impediment to the proper massaging of the uterus. Besides, it caused retroversion or retroflexion of the puerperal uterus and frequently caused haemorrhage In these cases, it was his practice to plug the posterior fornix with artificial sponges, thus lifting the uterus up and then massage the uterus to contract Instead of compression of the aorta, he advocated the compression of the uterine arteries with fingers on either side just above the symphysis, after lifting up the fundus.

When a woman is collapsed, it is better to treat her first for the shock and collapse, leaving the placenta alone, to be dealt with later. Non-interference is safe also in cases of retained placenta in septic abortions, even if it be for days together.

Miss Lazarus (*Madras*).—She was inclined to think that deaths in manual removal of placenta was due to air embolism rather than shock. She therefore recommended that the hand, after separating the placenta, should first be withdrawn gently from the uterine cavity, and the placenta expressed, thus avoiding a sudden evacuation leading to rush of air inside and air embolism.

She preferred to leave the patient alone, if seen in a condition of shock. She regarded a distended bladder as a cause of retention of placenta by pressing on the uterus and causing hour-glass contraction. Mere emptying of the bladder has been followed by expulsion of the placenta in many cases.

She controlled postpartum haemorrhage by bringing the uterus forward and kinking it against the symphysis and then massaging the uterus in a steady, gentle manner.

Dr. Purandare (*Bombay*).—Pressure on the aorta meant pressure on the sympathetic plexus, with further loss of tone of the uterus. Usually, there is partial separation of the placenta and bleeding,

and then manual removal becomes a necessity. Saline injection is useful when the placenta is altogether adherent to the uterus. Hour-glass contraction is the result of faulty manipulation of the uterus and not of pituitrin injection. Hot irrigation of the uterus is very useful in controlling hæmorrhage. Shock is produced by manipulation and loss of blood, and it is better to interfere early before the shock gets more profound. He had not come across any case of placenta accreta. In cases of failure with Crede's method, a further attempt with the patient under chloroform succeeds in a good number of cases.

Mrs. Dadhabai (*Bombay*).—She removes the placenta when there is hæmorrhage and does not think there is much risk in it when done under proper aseptic precautions. She left the placenta in utero for 5 days in one case and 7 days in another, and merely put in glycerine, and the placenta was expelled easily in each case. She thought that shock was due perhaps to the delivery itself, and not to retention of the placenta. She had used pituitrin in all the three stages of labour, and never seen hour-glass contraction after it; but thought it must be used in suitable cases and in proper dosage. She had tried saline injections in many cases without any good results.

Dr. Chamanlal Mehta (*Bombay*).—Anæmia and albuminuria of pregnancy, he considered, were important factors in causing retention of placenta and postpartum haemorrhage, on account of the exhaustion of the uterine muscle. It was not the mere retention of the placenta that killed the patient. With improved antenatal care, cases of retained placenta and postpartum haemorrhage could be minimised.

Dr. James (*Madras*).—In severe cases of postpartum haemorrhage he would advise bimanual compression of the uterus, with a hand shaped into a cone and introduced into the vault of the vagina and the other hand on the anteverted fundus. That was the only sure method of arresting haemorrhage. In cases of retained placenta with temperature due to sapraemia, he thought it rational to remove the placenta which was then a foreign body, instead of watching the patient go downhill day by day.

FRIDAY 3RD JANUARY 1936.

(Forenoon, 10 to 12-30 p. m.)

Subject for discussion: **PELVIC DISPROPORTION.**

OPENED BY DR. N. A. PURANDARE, M.D. (BOM.)

(Professor of Obstetrics, Seth Ghordendoss Medical College, Bombay.)

Introduction.—Disproportion means want of proportion. Such want of proportion may be between two objects. If applied to obstetrics, it could be between the child and the birth-canal. In labour the child is the passenger and the birth canal a passage ; its travelling through the passage would be comfortable or otherwise, depending upon the magnitude of the passage. Nature, in her earnest desire to perpetuate the species, has provided ample passage for the birth of the offspring. Woman is not an exception to it and possesses a generously constructed parturient canal. This is the reason why deliveries occur normally in such preponderating number.

The parturient canal lies in its upper part through a bony canal and in its lower part through soft parts. The most important is the bony canal called the pelvis ; because once this is passed, the child can, in ordinary circumstances, easily overcome the resistance of the lower soft canal. In the same way the greatest difficulty is with the head in passing down the birth canal. When once it descends, the rest of the body can easily follow. The head is therefore liable to be obstructed in the pelvis. The usual seat of difficulty is at the brim, the entrance to the pelvic cavity. Yet it may be detained in the cavity as in the generally contracted pelvis or at the outlet, in funnelshaped pelvis This proves the necessity of ascertaining the dimensions of the head and the pelvis But the head is a very variable factor. Some women may normally bear large children while others relatively small ones. Children born of later pregnancies are heavier than those of earlier pregnancies. Again children at term would be larger than those born a few weeks before time. Besides it is not easy to measure the head when in the uterus, so as to know its exact dimensions. But in the case of the pelvis, we can take certain measurements which enable us to estimate roughly its size and shape. These are external and internal measurements from which deductions can be drawn which help us to know the character of the pelvis. Moreover in these days, radiograms can be

readily taken, which furnish more convincing proofs. Even attempts are made to estimate proportions of the pelvis from radiograms but the methods of arriving at the conclusions are still very complicated and cannot be easily put to daily practical use.

Though the head is said to be a very variable factor, it is yet of practical utility in judging of the cephalo-pelvic proportion. In fact the foetal head is the real pelvimeter indicating the character of labour most likely to happen in an individual case. It can be known from whether the head is within the pelvis or free above it. When it is inside the pelvis, the head is either engaged or engaging. If free above, it must be ascertained whether it can be made to engage by pushing it over the brim in the direction of its axis, making use of anaesthesia if necessary, to get the true information. So long as the head is or can be made to engage, there is no disproportion; but the latter comes into existence as soon as the head is larger for the pelvis and cannot enter it under ordinary circumstances. In a normal pelvis with the head of the average size, the pelvis is large for the head and therefore it is usually engaged before labour sets in. If the pelvis is smaller than normal or the head is larger than the average size, the normal relation is not preserved and the engagement of the head is in consequence affected.

Time.—It is expedient to examine the pregnant woman in the thirty-sixth week This particular time is chosen because, in the first instance, by this time, according to the engagement of the head inference can be drawn as to the course of labour and the line of management to be followed. Should induction of premature labour be found convenient, the time suitable for it is on or after this week. If labour is induced before the thirty-sixth week, the chances of the child surviving its birth are very slender; but they improve more and more as each week passes. Again the weight of the child at the time of birth has to be taken into consideration. Whenever the weight is under four pounds (five pounds in the West), the foetus has poor chances of survival. This standard is generally reached in this week. So any time before this, is unfavourable to the child. The thirty-sixth week can be calculated from the first day of the last menstruation. But many a time the patient does not remember the exact date and it has to be reckoned from the height of the fundus in centimeters from the top of the symphysis pubis. It has to be multiplied by 2/7 when we approximately get the age of pregnancy in lunar months.

Assortment of cases.—In the thirty-sixth week, all the cases can be sorted out into different classes according to the cephalo-pelvic proportion. Pelvic measurements should also be then taken as they would be helpful in recognizing the actual shape and size of the pelvis.

The other things that may help in assorting cases are the appearance of the patient, previous obstetric history if she be a multipara, and an X-ray photograph.

The first thing that catches the eye is the appearance of the patient. She may be of an average height or short in stature. Short girls can be distinguished into two classes: thin short girls, generally born thin of thin parents, having all the parts proportionately thin who, tend to produce thin children provided there is not much disparity between the husband and the wife; the other class is of thick dwarfs, with broad face, disproportionate features and even exhibiting late evidences of rickets. It is the patient of the latter class who may have much distorted pelvis and present obstruction during labour. A patient may have some defect, such as scoliosis or kyphosis of the spine or lameness in one leg or difficulty in walking. These defects would indicate alteration in the contour of the pelvis.

Should the patient be a multipara, her previous obstetric history carries much significance and must be enquired into. If she has had protracted labour with the child still-born or dying within a few hours or a couple of days after birth, such a history should wake up the suspicion of disproportion between the child and the pelvis.

The other help in sorting out cases is pelvimetry. Here I need not go into details of it. Suffice it to say that two kinds of measurements are usually taken, the external and the internal. The external measurements are: Interspinous, Intercristal and External Conjugate. The average measurements of Indian pelves are 9, 10 and 7 inches. These diameters are of practical use but they help to form but a rough estimate. The intercristal diameter is greater than the interspinous by one inch. It may be mentioned here that this difference is in my practice not so frequently found to be one inch as $\frac{3}{4}$ of an inch. If the former approaches the latter in length, it suggests flat pelvis with reduction in the conjugate diameter. The intercristal is important in other ways; from it the transverse diameter at the brim can be determined; the half of the intercristal represents the length of the transverse. The significance of knowing the length of the transverse diameter of the brim is most demonstrated while dealing with the flat pelvis; it should be over $4\frac{1}{2}$ inches; when under, obstruction is raised in the descent of the head through the brim. External conjugate is important in that inference can be drawn in respect of the conjugate diameter. Here I may mention that on measuring the conjugate diameter in female subjects in the dissection room as the abdomen is opened and taking the average of fifty-three cases, I have found it to be 3·97 inches, a trifle less than four inches. Inasmuch as the external conjugate is on an average 7 inches and the true conjugate nearly four inches, it has been arbitrarily

decided to deduct three inches from the external conjugate to get the length of the true conjugate. In the event of the patient being fat, $3\frac{1}{2}$ to $3\frac{3}{4}$ inches have to be subtracted from the dimension of the external conjugate. For knowing the capacity of the outlet, the pubic arch may be traced by fingers to distinguish its size, and the antero-posterior and the transverse diameters are measured, the former between the lower border of the symphysis pubis in front, to the tip of the sacrum behind; and the latter, between the ischial tuberosities. These outlet measurements are useful in the generally contracted pelvis, in the type of male pelvis, funnel-shaped pelvis and osteomalacic pelvis.

Of the internal measurements, the most important is the diagonal conjugate, measured from the lower border of the symphysis pubis to the promontory of the sacrum by means of the index and middle fingers of the right hand. It is worth remembering that normally the promontory is not easily reached. The significance of this diagonal conjugate diameter consists in its being about half an inch greater than the true conjugate. True internal measurements are now scarcely taken, except tracing the brim from before backwards. In a normal pelvis, it cannot be felt more than the anterior one-third.

Nowadays an X-ray photograph renders great help and has to be taken when the slightest suspicion of pelvic disproportion is awakened.

Last but of the greatest importance, is the engagement of the head. The head may be engaged or may be made to engage the pelvis, or it may be lying free above the brim and cannot be made to enter it. When it has descended into the pelvis, it may have reached the ischial spines and be lying at the obstetrical outlet when it is said to be fully engaged, or it may have reached the mid-plane and then it is half engaged The head may have just entered the pelvis when it is regarded as engaging. When the head lies free above the entrance to the pelvis and does not tend to enter it, it is regarded as floating; it is then freely ballottable.

When the head is thus above the brim and cannot be made to enter it, there is disproportion between it and the pelvis. The degree of disproportion may be determined by the amount of over-riding of the symphysis pubis by the head. If the head merely covers the top of the pubis, so that the anterior surface of the head is not beyond the anterior surface of the pubis, the disproportion is slight; but when the head overlaps the anterior surface of the symphysis pubis so that a portion of the head is bulging beyond its anterior surface, the disproportion is excessive. In the case of slight disproportion when the head overlaps only the posterior edge of the pubis, should labour occur

Distinguishing features of the different classes.

Class.	Engagement of the head.	Descent into the pelvis.	How much above the plane of the brim.	Greatest circumference of the head.	Relation to anterior wall of the pelvis.	Height of the anterior shoulder.	Overlapping of the symphysis pubis.	Bulge beyond the anterior surface.
A.	Full.	To the ischial spine.	$\frac{1}{4}$	Below	Distinct space.	2″	No.	No.
	Half.	Mid plane.	$\frac{1}{2}$	In the plane of the brim.	Space felt.	3″	No.	No.
B.	One-fourth.	In the brim.	$\frac{3}{4}$	Above the plane of the brim.	Little felt.	4″	No.	No.
C.	No.	Nil.	Whole.	Above.	No.	$4\frac{1}{2}$″ to 5″	Slight.	No.
D.	No.	Nil.	Whole.	Above.	No.	5″	Excessisve, head overhanging.	Distinct bulge.

under the circumstance, the head will reduce in size by moulding and enter the brim. The reduction required is equal to the thickness of the symphysis pubis, which is ordinarily one-fourth of an inch. The head can mould to that extent because the superior edges of the parietal bones are apart for about one-eighth of an inch as they are united through a membrane and secondly owing to this membranous union the bones can overlap at their edges. In this way the head can undergo moulding and adapt to the pelvis. But the moulding needed and in consequence the overlapping of the parietal bones that occurs should be such as not to overstrain the internal lining of the cranium, *viz.*, the dura-mater nor to subject the brain and other cranial contents to dangerous compression. So long as the disproportion is slight, this does not occur and the moulding is within the safe physiological limit; but when the disproportion is great, the head overhanging the pubis, the moulding wanted to adapt to the brim is excessive, giving rise to injuries within the head.

Engagement of the head conforming to the dimensions of the conjugate:—Though the engagement of the head gives the necessary practical information as regards the cephalo pelvic proportion and helps to make out the pelvic disproportion, it is customary to classify the pelvis according to its dimensions. The types of pelvis generally seen are rickety flat pelvis, oblique pelvis and generally contracted pelvis. This

is the order in which the cases are seen in Wadia Hospital in point of frequency.

These are two points which have to be realized before proceeding with the consideration of the reduction in pelvic dimensions. As has been said already, the average length of the conjugate diameter in Indian pelvis is 4 inches as taken from female subjects in dissection room.

Again, the average lengths of the different diameters of the foetal head have been determined by Dr J. M. Purandare, late demonstrator in midwifery, in N. W. M. Hospital, by measuring soon after birth the heads of two-thousand children born consecutively at the Wadia Hospital. They were found in general to be ¼ of an inch less than the Western measurements. So there is relative reduction between the pelvis and the head. Since this is the case, the character of labour will be almost the same even though the standard of the degree of contraction of the conjugate diameter may vary. The pelves are classified according to the length of the conjugate diameter, which is taken approximately from external conjugate or diagonal conjugate diameter.

Now it must not be forgotten that the transverse diameter at the brim especially in a flat pelvis is very important, because the head in it engages this diameter and in consequence it should be sufficiently long, at least 4½ inches to allow the head to pass the brim with the usual specific mechanism.

To take the common method of classification, the pelvis may be normal or contracted to a minor, medium or major degree. In the pelvis with normal proportions, the conjugate diameter measures 4¼ inches (here 4 inches), in minor degree, 3¾ inches and above (3½ inches upwards), medium degree, 3 to 3¾ inches (2¾ to 3½ inches) and major degrees, under 3 inches (under 2¾ inches here). This classification corresponds to that given before, namely classes A. B. C. and D, the criterion being in one case the length of the conjugate diameter and in the other the engagement of the head. It is difficult to know exactly the length of the conjugate diameter while the engagement of the head can be well determined ; so the latter classification is preferable and more practical.

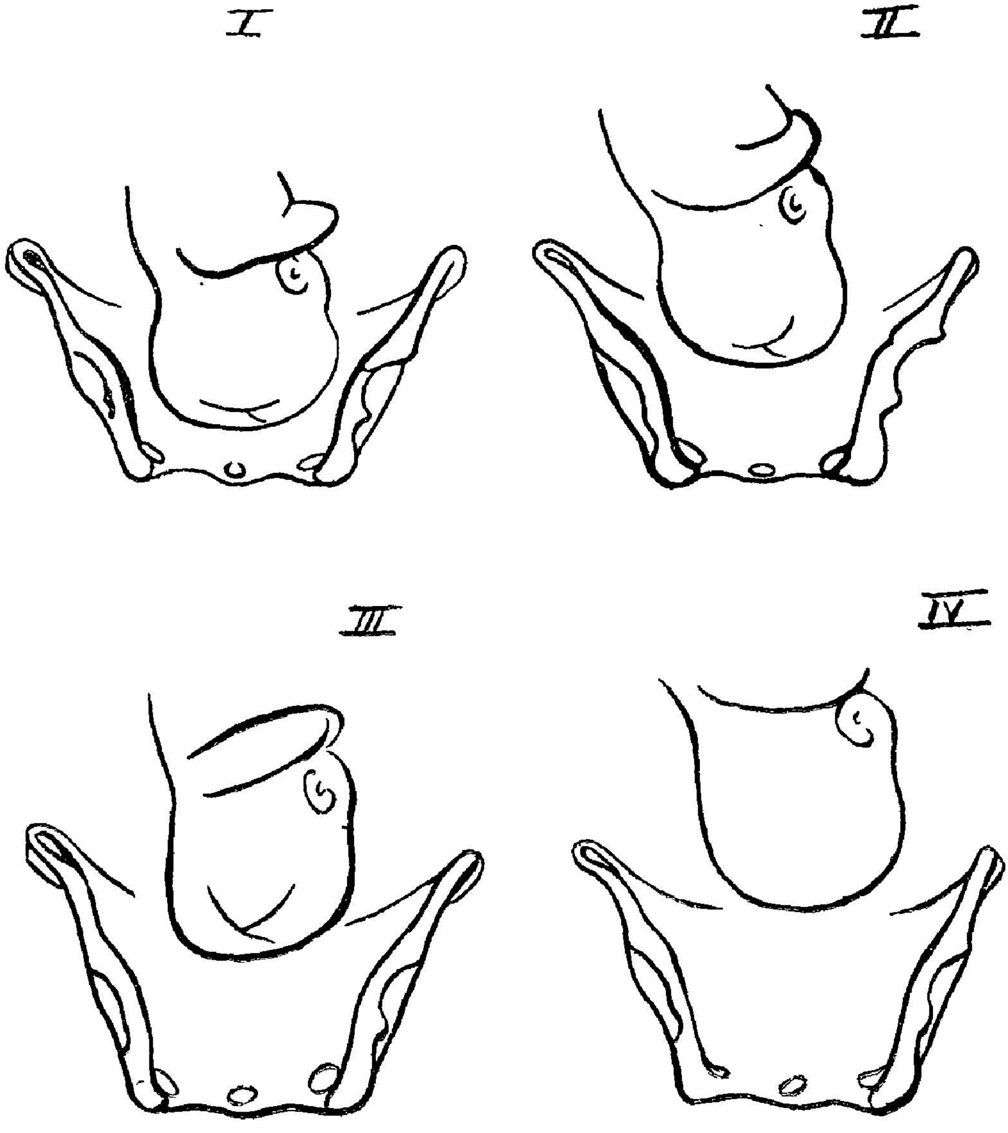
It may be mentioned here that whatever has been said under the classes made according to the engagement is equally applicable to those according to the degree of pelvic contraction. Disproportion between the head and the pelvis is observed in the medium and major degree.

Labour.—It is easy to forecast about the nature of labour when the conjugate diameter is normal in length as in class A, and when

contracted to the major degree as in class D. In the former it would be normal while in the latter, the child will not enter the brim nor will be born naturally. In minor degree, when the head is only engaging and the extra space in the pelvis is wanting, in most cases delivery will be effected normally, provided the strength of the uterus will be sustained up to the end. In this B class of case the uterus has to do more work since the head is at the onset of labour at the brim and not at the obstetrical outlet as is observed in the normal pelvis. The uterus has to drive the head down through the pelvis before it can reach the obstetrical outlet, the posterior landmarks of which are the ischial spines. After it has gained this limit, the head has to travel through the lower soft birth-canal, passing over the pelvic floor and the perineum and emerging at the vulva. In carrying out so much work, the reserve power is invoked and the uterus is enabled to cope with the work; if not, towards the close, the organ begins to manifest signs of failure, when artificial help has to be applied to finish labour. Here one fact has to be recognised and it is as labour advances, the lower segment, bladder and surrounding tissues are lifted out of the pelvis, the space at the brim increases in its area and more room is thus formed for the head to occupy.

In class C, where contraction is of medium degree, and there is distinct disproportion, it is not easy to fortell the termination of labour. It may end normally or with the help of forceps or labour has to be induced prematurely at the suitable time or the head may not engage the brim in trial labour, and the child has to be extracted by lower segment Caesarean section or at examination in the thirty-sixth week the head is overhanging, the child is delivered by Caesarean section at term. The range of the conjugate diameter is wide, being 3 to 3¾ inches (2¾ to 3½ inches). When the pelvis is approaching to the higher class, the child may be born after the head has undergone reduction in size by moulding during labour and then entering the pelvis and has travelled the whole birth canal In accomplishing this, the uterus has to do more work than in class B, in that it has first to bring about moulding and then adapt the head to the brim. If the strength is maintained the child will be born spontaneously or else with the help of forceps. Should the pelvis come nearer to the lower class, the head may be overlapping even the anterior edge of the symphysis pubis in the thirty-sixth week and there is little chance of the head of the average size entering the brim during labour. Such a case is meant for Caeserean section at term. This fate is observed with the pelvis having the conjugate diameter ranging between 3¼ to 3 (2¾ inches to 3 inches). By far the greatest difficulty in forecasting the issue of the individual case is met with when the conjugate diameter is between 3¼ and 3½ inches (3 and 3¼ inches). In trial labour the head may or may not enter the brim. If it does not, even

two hours after rupture of the bag or does so partially, the greatest circumference of the head being above the brim, the case is fof abdominal operation. Here again the anterior shoulder will be or great practical use. If it continues to remain at the height of four inches or above, it is of grave import and points to the head not descending.



Methods of examination for distinguishing disproportion.—For distinguishing disproportion, careful abdominal or bimanual examination has to be done By abdominal palpation the relation of the head to the pelvis can be estimated. To facilitate the work, the bladder and rectum should be empty. Should the woman be nervous and holding the abdominal wall rigid, an anaesthetic may be needed. First what is judged is whether the head has descended in the pelvis or not. It

can be recognised by palpating the head and also by measuring the height of the anterior shoulder. When the head has entered, the greatest circumference of the head is below the level of the pelvic brim and the anterior shoulder is under three inches. In this case, usually a space can be made out between the head and the anterior wall of the pelvis. Should the head be fully engaged having reached the ischial spines, a quarter of the head is felt from the abdomen and the anterior shoulder is 2 inches above the brim and a space more than a finger's breadth is detected between the head and the pubis. When half engaged, reaching the midplane, half of the head is palpable from the abdomen, a free space just enough for the finger to enter is discernible the greatest circumference is at the brim and the height of the anterior shoulder comes to be three inches. On pressing by the left hand on the fundus and feeling by three fingers of the right hand, held just above the top of the pubis, the head may be distinctly felt to descend further down in the cavity. When the head is in the brim, three-fourth of it with its greatest circumference is found above it, the head is slightly ballottable and the height of the anterior shoulder is four inches. On feeling by the fingers at the pubis, the anterior surface of the head will be felt quite in touch with the posterior surface of the pubis on pressing upon the fundus slightly to descend in the pelvis. By Pawlic's grip the head can be slightly moved from side to side.

If the head is floating, it can be readily ballotted and the anterior shoulder is from 4½ to 5 inches above the pubis. It does not engage when there is cephalo-pelvic disproportion and generally in multipara whose abdominal and uterine walls are lax and not possessing the usual tone. However, in the latter the head can be made to enter the brim by holding it by both hands and pressing it down in the direction of the axis of the brim or by making the patient sit and bend forward. I have found that better information can be obtained by pressure on the fundus. The latter is first brought forward and then pushed downwards and backwards. The head is invariably found to enter the pelvis when normal conditions obtain. This method has proved useful when others failed to give information. If the patient is intolerant of manipulations, an anaesthetic is called for. When under anaesthesia, besides the abdominal examination, bimanual examination with Munro-Kerr's method should be applied in determining the cephalo-pelvic proportion. Here too, the relation can be judged better by pressure upon the fundus rather than holding the head and pressing it downwards and backwards; the head in the latter case is noticed to overlap the symphysis pubis more, which is better appreciated when both the methods are tried and compared at the same time.

When there is disproportion, as seen with the head larger than the pelvis, it will not enter the brim and will be overlapping the

symphysis pubis, which can be discovered both by abdominal and bimanual examination. Pressed upon the brim, the head may be detected just to enter the brim with difficulty or to overlap either the posterior edge or the anterior edge of the symphysis pubis. When overlapping the posterior edge, the anterior surface of the head lies on the inside of the vertical plane of the anterior surface of the symphysis and the overlapping is then slight; when overlapping the anterior edge, the head bulges beyond the pubis and the overlapping is excessive. With the slight overlapping, the head can adapt to the brim by moulding but with excessive overlapping, either the moulding required for the head to engage is such as to cause harm to the brain and its coverings or the head will not enter even with the excessive moulding.

While making bimanual examination, should the head be discovered to enter the pelvis, by vaginal fingers its descent in the cavity can be determined. To estimate the extent of descent, certain landmarks are taken on the anterior and the posterior wall of the pelvis. On the anterior wall are the midpoint and the lower border of the symphysis and on the posterior wall, the ischial spines. When the head is floating but could be made to enter the pelvis either with or without anaesthesia, the vaginal fingers will notice the head just entering the brim, or descending to the mid-plane, taken between the midpoint on the anterior wall and the junction between the second and the third piece of the sacrum, or the lower border of the symphysis in front and the ischial spines behind While the internal fingers thus note the extent of the descent of the head, the thumb above the pubis as held in Munro-Kerr's method will feel it within the pelvis This information is especially useful when the examination is made for determining the time for inducing premature labour. As long as the head enters the pelvis, the time has not come to induce premature labour. If the head descends to the mid-plane or below, the next examination may be done a fortnight after, but if found to engage the brim only, the examination must be repeated in the next week, since the induction has to be done when the head is just unable to enter the pelvis. The thumb held above the pubis is useful in intimating the extent of overlapping of the symphysis and when the head just cannot enter, only the posterior part is covered by it. If the thumb indicates that the anterior surface of the head is in a line or behind the anterior surface of the pubis, the overlapping is slight and if labour were to start, the head will enter after undergoing moulding. In the thumb finds the head bulging, the fate of the case will depend upon the extent of bulging and the uterine force. Should the bulge be slight and the uterus contract powerfully, the head may by excessive moulding engage the pelvis and may even be born spontaneously but in most cases it will be a still-birth. If bulging is much, the head will not engage even after excessive moulding.

Determination of the line of treatment.—It is easy to know the treatment to be adopted in the case of class A and class D. The cases of class A are left to Nature since normal delivery is anticipated; those of D class are destined for Caesarian section at term as the child is not to be born by the natural passage. In B class, most of the cases will end naturally. Some may require artificial help in the shape of forceps application towards the end. The course will depend upon how the uterine force is sustained. The multiparae of this class may have their first deliveries taking place spontaneously through effective contractions but in later deliveries may call for forceps. In cases of the C class labour may be prematurely induced as soon as the head is just unable to engage, or they may be placed on trial labour, when, as not infrequently happens, spontaneous delivery results or the head not engaging lower segment section has to be done, or Caesarean section at term may have been determined on finding much overlapping in the thirty-sixth week. It is obvious from this that the C class cases present the most difficult problem in deciding at once the line of treatment and it requires great judgment cultivated by experience in arriving at a decision. To induce premature labour, it must be done at the proper time so that the child should be born without any difficulty and at the same time should possess all prospects to live. Trial labour cases should have been properly sorted out and must be watched with great assiduity and artificial help has to be rendered long before any harmful effect is produced either on the mother or the child. While determining for Caesarean section the surgical conscience should first be satisfied. The operation cannot be lightly undertaken in that the mortality from it is not negligible, being 3·7 per cent. when done for contracted pelvis and 1·5 per cent. even in clean cases (Munro-Kerr and Holland). When compared with normal labour " the risk of Caesarean section is at least three times as great as that of normal labour ". Lower segment section is less risky and is expedient for cases which have been in labour for some time.

Management during labour.—In these days where antenatal supervision is generally instituted, pelvic contraction ought to be detected before labour sets in. But not infrequently it is discovered after labour has been in progress several hours. In a clean case the line of treatment should be the same as determined for one seen in the thirty-sixth week. If seen in early labour, should the overlapping be excessive, Caesarean section is indicated; if slight, the case is watched further, allowing time for moulding to occur and measuring the height of the anterior shoulder every hour for noting the progress. If the first stage has lasted more than twelve hours in a primipara, even though the pains are recurring at regular intervals and are of proper strength, the disproportion still persists and the anterior shoulder remains at the same height, the question of Caesarean section arises. If the bag has ruptured untimely and the head remains above the brim and if on

vaginal examination, the cervix is found reformed, lower segmetn section is absolutely indicated. In deciding upon the abdominal route, one point has always to be taken into consideration ; and it is the previous vaginal examination or manipulations, that may have been done involving the risk of sepsis. Under the circumstances, Caesarean section is contraindicated.

If the head has entered the brim only and further progress is arrested ; and if the pelvic measurements and the skiagram indicate that the pelvis has smaller dimensions, and the patient has not been exposed to infection, lower segment Caesarean section will be expedient in the interest of the mother and the child. During the operation the head can be easily disengaged, secured by the Willett's forceps, and removed. Here again the height of the anterior shoulder will be a better guide. It will remain at 4 inches or above. By vaginal examination a wrong information may be given by the great caput succedaneum that may be formed, the head appearing as if to have reached the lower part of the pelvis. Under this false impression if forceps be applied, the child will by no means be extracted alive and the mother will inevitably run the risk to her parts being widely damaged, from the consequence of which she may suffer immediately and afterwards perhaps all her life, leading the miserable life of a cripple. If Caesarean section is contra-indicated, and the child at the same time presents meagre chances of surviving, it should rather be sacrificed. But when the child appears to be in very good condition its heart beating vigorously, and its head not much larger than the pelvis, as determined by abdominal palpation and from skiagram, pubiotomy may be performed to increase the capacity of the pelvis and then the child is extracted by forceps. Should the head have descended into the midcavity, ascertained more by height of the anterior shoulder, being three inches and under, than by feeling it per vaginum, the axis traction forceps may be tentatively applied and traction made. Before the application of the forceps, careful examination of the head should have been done to see that the occiput is to the front ; if not and the occiput is distinctly directed behind, it should be rotated forward before applying the blades If the head is down on the pelvic floor or better still on the perineum the forceps can be safely applied with the first indication for it.

CONCLUSIONS

1. Disproportion has to be regarded only when the head cannot be made to engage the brim.

2. Pelvic measurements give only rough estimation.

3. Engagement of the head is the more reliable guide. The head may be engaged, either full or half, or may be just engaging, or may not be engaging at all, thus floating above the brim.

4. When floating, it may be made to engage as in a multipara or with difficulty to enter the brim when pelvis is contracted.

5. It may not enter; the head may be overlapping the symphysis pubis.

6. The overlapping may be slight or much.

7. Slight overlapping is known by the anterior surface of the head being behind the anterior surface of the symphysis pubis.

8. Much overlapping is recognized by the bulging of the head beyond the anterior surface of the pubis.

9. In the case of slight overlapping, the head may undergo moulding, and adapting to the pelvis, may enter the brim. No injury occurs within the cranium.

10. In much overlapping, the head may enter the pelvis; but the moulding required is so excessive as to cause injury to the cranial contents and the child is either still-born or dies within a few hours or a couple of days after brith. The overlapping may be so excessive that the child can under no circumstances enter the brim and be born by natural passages.

11. Overlapping may be recognized by pressing upon the fundus in the forward and downward direction while the four fingers of the right hand feel the head above the anterior surface of the pubis.

12. Examination should be made in the thirty-sixth week.

13. Cases should be sorted out into four classes, A, B, C and D classes.

14. The class A is characterized by normal relation between the head and the pelvis; B by the head fitting closely the pelvic cavity, C by disproportion, the head being larger for the pelvis but likely to engage the pelvis by moulding and be born by natural passage and D by the head being so large as not to be born by natural passage.

15. In class A normal delivery occurs. In class D no delivery can occur by natural passages. In class B in most cases normal delivery occurs; in some, forceps has to be used. In C, normal delivery in

some, sometimes with the help of forceps. In some, normal delivery can occur only when premature delivery is induced. In the remaining, the labour is obstructed and delivery has to be effected by abdominal route.

16. Trial labour in slight disproportion and even in B class, in multiparae where previous labour was difficult.

Induction of premature labour.

Trial labour with lower segment section.

Caesarean section.

Pubiotomy.

Craniotomy.

THE PLACE OF PUBIOTOMY IN THE TREATMENT OF PELVIC DISPROPORTION.

By Miss A. B. S. Smith, M.B., CH.B.

Not long ago, I heard someone say of pubiotomy, "I thought nobody ever did that barbarous operation nowadays."

I hope that if a similar impression exists in your mind, I shall be able to correct it, and, at the same time demonstrate that pubiotomy has a definite if limited place in the treatment of disproportion. I speak, out of limited but satisfactory experience only some half a-dozen cases having been considered really suitable in my 10 years work at the Rainy Hospital.

In selecting a suitable case from amongst primiparae the following points should be borne in mind :—

Firstly.—She should not be very young. We are unable to predict what the ultimate size of the pelvis is to be, and we do not want to interfere with it in its growing stage.

Secondly.—She should not be too old lest damage occur to the more rigid soft parts and brittle bones.

Thirdly.—The disproportion should not be greater than to raise doubt in the mind regarding the possibility of safe pelvic delivery.

Fourthly. —There should be every liklihood of obtaining not merely a living baby but one which will survive. The foetus should not be dead, deformed or very premature

Fifthly.—The presentation should be a normal vertex. In the absence of malpresentation, subsequent labours might terminate normally.

Sixthly.—Labour pains should be good throughout. There should be no question of the delay being caused by inertia.

Seventhly.—The os should be fully dilated or at least fully dilatable.

In the case of multiparae we have additional guidance from the history of previous labours. There may have been recurring malpresentation, or habitually large children still-born after difficult labours ; or there may have been instrumental labours followed by still-birth though the presentation had been normal.

External pelvimetry is sometimes helpful, but its accuracy, depending as it does largely upon the personal factor and thickness of the soft parts, is a debatable point.

Internal pelvimetry on the other hand is more accurate, provided it is performed under chloroform, before the foetal head is fixed, and with a colleague present to check the figures obtained, by making independent observations.

Its application is limited, for though we learn something definite about the bony pelvis, our problem regarding the amount of disproportion is not necessarily solved. Moreover, most patients are in an advanced stage of labour when first seen, and a procedure involving so much vaginal handling is then undesirable.

On the whole I am inclined to regard pelvimetry as more of obstetric interest than of obstetric value so far as pubiotomy is concerned.

In preparing for the operation it is well to remember to have an extra catheter and an extra gigli saw ready. The assistants commandeered to support the legs, should be sturdy and strong.

A broad firm binder should be placed in readiness under the patient's hips.

I need not describe the actual operation or the instruments used but I follow more or less that technique of Fitzgibbon whose results

were always satisfactory. I pass the pubiotomy needle over the crest and out through the labium and not *vice-versa*, as described by some operators.

In performing the operation the following hints will be found useful :—

1. When the preliminary catheter is passed, a little urine should be left in the bladder.

2. The upper incision though small should be made in the line of sawing, *i e.*, parallel to the symyhysis and not parallel to the crest of the pubis.

3. When drawing the saw into position through the wound the free end should be held tight to prevent the saw becoming detached from the hook of the pubiotomy needle.

4. A second catheter should be passed before the sawing is begun. If the urine is blood stained the cavity of the bladder may be explored with a bladder sound to eliminate the possibility of penetration of the bladder by the saw.

It should be remembered however that the frequent passage of catheters may have irritated the urethral mucous membrane and caused the urine to be blood-stained.

5. When sawing, the hands should be separated by an angle of at least 110 degrees ; otherwise the delicate gigli saw may snap.

6. When sawing is nearly completed the assistants should bring the patient's legs towards the middle line and raise her buttocks a little from the bed by means of them.

7. The supra-pubic and arcuate ligaments should be completely severed along with the bone.

8. While withdrawing the saw, two fingers of the left hand should be slipped into the vagina, and bleeding controlled between them and the overlying thumb.

9. The patient should not be removed from the labour room, for experience teaches us to expect delivery shortly after pains recommence.

Most books stress the necessity for the immediate application of forceps after pubiotomy, Berkeley and Bonny even go so far as to suggest that the operation should not be performed unless the operator is prepared to apply forceps immediately. I emphatically disagree. It is true, the obstetrician is sometimes *obliged* to assist nature but let him

not press his services further upon her. The obstetrician who is officious in his dealings with nature is a danger to the cause of safe maternity.

The temptation to complete delivery at once is a natural one. When everything is ready and even the operator is surgically clean it seems absurd to delay. We should remember however, the advantage to the patient particularly the primipara—of allowing the soft parts to stretch more gradually than is consistent with instrumental delivery. Moreover, even the application of forceps increases the chance of a morbid puerperium.

The result of leaving the patient to deliver spontaneously is so dramatically satisfactory, that patience is well rewarded.

The after care consists in :—

(*a*) Securing rest and relief from pain by prescribing sedatives.

(*b*) Reducing the swelling of the labium by raising the lower end of the bed for a few days.

(*c*) Increasing the tone of the bladder by giving pituitrin.

(*d*) Washing out the bladder if pus is found in the urine.

(*e*) Relieving the aching in the sacro-iliac joints by applying a tight binder.

(*f*) Preventing bony union by encouraging early movements.

The decision to perform pubiotomy, depending as it does, more upon the unknown factors of labour (type of contractions, size and mouldability of the foetal skull, etc.) than upon the known factors (size and shape of pelvis, etc) must necessarily be performed late in labour. It is a distinct advantage that it can be done then. Caesarean section on the other hand is usually planned beforehand and performed early in labour. Further advantages are that—the application of high forceps with its attendant horrors is avoided.

It involves little vaginal manipulation and consequently does not add to the risk the patient runs where infection is suspected.

The important anatomical structures in the neighbourhood of the clitoris and urethra are not damaged as they would be were smyphysiotomy performed.

After complications need not be feared. The period of convalescence is not delayed by more than a few days for the patients display

surprising agility soon after they start to walk. The preliminary stiffness rapidly disappears.

Permanent increase in the size of the pelvis enables further labours to proceed normally. The skiagram in your hands shows an increase of 1⅛ inch, *i.e.*, nearly 3 cm.

But, in the "Glasgow Manual of Midwifery" one comes across the extraordinary statement that the permanent enlargement is so little if any, that bone grafting or resection of the promontory of the sacrum should be considered for the sake of future labours.

If that were true, all I can say is that I should agree entirely with my friend who applied the adjective "barbarous" to pubiotomy: and I should certainly not be standing here today to plead its cause.

I do not wish to encroach upon the time allotted to others, so I shall merely refer to one or two of the more interesting points connected with some of my patients.

All patients and babies went home well. In no case was there damage to the soft parts of the mother.

Of their subsequent labours, all those which I have witnessed or heard about, were perfectly normal.

The history of each pubiotomy labour presents distinct similarities.

The head is unfixed when labour begins; membranes rupture early.

Labour progresses slowly in spite of good contractions. Foetal head becomes fully flexed, caput large and bones overriding. Advance ceases before the greatest diameter has engaged.

Pressure on the fundus fails to propel the head any nearer the examining finger.

There is increasing difficulty in emptying the bladder and catheters have to be passed.

The os remains incompletely dilated—though dilatable.

The patient's pulse and temperature tend to rise and her tongue to get dry.

The Skiagram I passed round, is that of a woman aged 28 who had had a difficult forceps delivery with still-born baby in 1924. It was followed by vesico-vaginal fistula.

I repaired her v.v.f next year. In 1926 she was admitted in labour for the 2nd time and as the labour was proving a repetition of the first, pubiotomy was done and within ½ hour the baby was in the bed.

She had had 4 labours since then, all normal.

Her pelvis was of the generally contracted simple flat type and her infants except for 2 of them were above average weight.

Another multipara was a woman aged 22 admitted in labour for the 4th time. Her 3 previous deliveries had been conducted in a well-known hospital and had all ended in the still birth of small infants—after instrumental delivery.

Vaginal examination revealed a definitely generally contracted pelvis. Indeed, had it not been for the previous history and the fact that the foetal head was again very small, I should have had little hope at all of a safe pelvic delivery even after pubiotomy.

Her measurements by external pelvimetry were interspinous 17, intercristal 18, external conjugate 14½ c.m.

Pubiotomy was done after she had been in labour for about 24 hours, but to my chagrin the separation of the bones was so little that after another 2 hours with no advance, I reluctantly applied forceps. But I could not budge the child till a short sharp rending sound occurred like the rending of a piece of cloth, and the infant literally fell on to the perineum The bone edges were now found to be separated about 1¼ inches or more and a 4 lb. 2 ozs. baby was then quickly delivered. Evidently some fibres of one or other of the pubic ligaments had been left unsevered I ought really to have suspected it when I found separation had not taken place.

The only patient who ran a morbid puerperium was a primipara aet. 20 years.

She had attended our antenatal clinic where she had been diagnosed as mild contraction of pelvis.

Her external measurements in cm. were found to be :—20 interspinous, 22 intercristal, 15½ external conjugate—though the house surgeon or nurse who admitted her found them to be 22, 24, and 19 respectively.

(This illustrates my point about the personal factor in external pelvimetry.)

When first I saw the patient in labour, she looked distressed, pulse had risen from 80 to 118 temperature from 98 to over 99° F. She

had been in labour for over 24 hours. All progress had ceased. Her pelvis was small and rather round in shape. After watching her for 2 hours or so pubiotomy was done and delivery of a 6 lb. 2 ozs. baby was completed within an hour

She ran a temperature ranging from 100-102°F with a pulse of 100-104 for about a week. After a bladder wash out in which was much pus, her pulse and temperature gradually settled. Her progress thereafter was uneventful.

The small photo I sent round was taken of her and her baby between 2-3 weeks after pubiotomy. I send it round, insignificant though it is, that you may get some idea of her stature and build, and the size of her baby. She refused absolutely to have a skiagram taken even for the benefit of this august assemly.

REVIEW OF CASES OF CONTRACTED PELVES AND PELVIC DISPROPORTION AT THE CAMA AND ALBLESS HOSPITALS, BOMBAY.*

By Miss Telang, *Cama and Albless Hospital Bombay.*

In taking up this paper, I may emphasize that the various types of contracted pelves with absolute indications as to bar the delivery *per via naturales* are not included here Hence the cases of classical Caesarean in the paper have been cases of absolute indication. The rest of the cases of contracted pelves or pelvic disproportion which really test one's judgment and are a source of sincere trial to one, will be mainly considered.

The whole aim in our mind is to better the maternal and foetal results, to achieve which one has to emphasize the value of antenatal clinics. Mothers have realised the necessity of such clinics and hence their greater attendance day by day. This is the place where proper sorting can be done and cases posted for trials, etc.

The usual routine examination from the general appearance, gait, pendulosity and if a multipara, obstetric history as regards still births, instrumental deliveries and delayed first and second stages, is carried out. External pelvimetry is done to show roughly, what type of a pelvis it may be. The foetal head is the best pelvimeter and in all these test labour cases, the aim should be to ensure a vertex presentation before starting on the trial.

* *Vide* table given at the end of paper on p. 84.

Internal examination is of prime importance, as by the method of Munro-Kerr, the amount of over-riding can be properly guaged. The occipito-posterior position gives an erroneous impression of overlapping in some cases, so much so that one may even think of resorting to some operative method, when the whole process ends satisfactorily with the onset of good labour pains.

A careful antenatal examination at the end of the 8th month is essential, and it is at this stage, or two weeks later, that the cases are arranged in different compartments, as for Caesarean section at term, or trials of premature induction of labour.

In borderline cases, a decision is arrived at with certainty only after labour has been in progress for some time, and the head has assumed a definite position and the soft parts have relaxed and thinned out. Faulty judgment in some may be attributed to two unknown factors that come into play with the labour pains—one is the plasticity of the foetal head and the other is the factor of uterine contractions.

The cases of trial are a source of great anxiety, and ought to be under expert supervision from the start. A certain routine has to be laid down in institutions for these test labour cases, and this is followed as soon as such a case comes into labour.

The emptying of the bladder and the rectum first done and an injection of morphine 1/6 gr. with atropine 1/150 gr. is given to quieten the patient and bring about rhythmical and painless contractions The most favourable points towards a successful termination are a bag of membranes of a round contour and its further progress downwards, followed by the head The arrest of the head above and further progress of the bag nearly to the vulval outlet, and also a finger-glove type of a bag or a saggy bag. are often conducive to failures of trial. In some cases where the work of this bag is over, it is imminent to rupture it, and watch the further course after ensuring proper flexion.

The narrowing of the transverse diameter at the brim leads to arrest of the greatest diameter of the vertex and progressive caput formation and moulding. Non-uniformity of pressure of vertex on to the cervix has led to oedematous state of the cervical lips. Owing to pendulosity, the uterine axis tends to drive the foetus either too far backwards and not into the proper pelvic axis. Rectification of the uterine axis is brought about by an abdominal binder. As soon as the bag of membranes ruptures, foetal heart count is taken half-hourly, Very quick or very slow foetal heart rate, more so a slowing of the rate after the quick beats, are signs of foetal distress, though in one of our cases with a foetal heart of 80, the baby was born alive three hours later.

We have, as a rule, required two p. v. examinations and one more in some cases of dystocia where delay is in the proper taking up of the cervical hood Last, but not least, the relaxation and preternatural mobility of the pelvic joints during pregnancy and labour, are Nature's aids to overcome minute disproportions. The effect on the bayb is far more serious in generally contracted pelves, where the resistance is felt throughout, and several babies with marked moulding have shown signs of intracranial stress. In some cases, where the head has rushed through from the brim to the outlet very rapidly, signs of intracranial haemorrhage have been also present. A proper success to trial means a normal delivery, or at the most, a low forceps delivery, with a live child. The lower segment Caesarean section is an apology for the failure of trial.

In primiparae, a still birth with a normal vaginal delivery should not be despaired of, as with further development, better results have been obtained in succeeding labours. The following case is cited as an example

Name, H. A. R., age 18, second para, 1st still birth (forceps) Measurements: $7\frac{1}{2}$, $8\frac{1}{2}$, $6\frac{1}{2}$, $2\frac{3}{4}$. X-Ray of pelvis—generally contracted type. P.A., L O.A., head not fixed. Started pains.—P V.—os 2 fingers loose, bag forming. 6 hours later membrane ruptured, head at same level. P.V.—tendency to non-flexion, os 3 fingers loose, head flexed and watched. 3 hours later, head started going down; 2 hours later still normal delivery, female baby, 7 lbs. weight.

Here, overlapping at an early stage, was probably due to the non-flexion. Though a case of generally contracted pelvis, where as usual, head is fixed with the start of labour pains, good pains and ensuing flexion helped the patient. The role of forceps and version is well known to us all. Better results with the latter are ecountered in flat pelves.

Pubiotomy has without doubt a select and limited field in obstetrics but as we have not performed them in our hospital, we are unable to present our views on the subject.

In balancing the pros and cons for the lower segment Caesarean section and premature induction, the facts compare favourably with the latter mode of delivery, as in the former case, once a Caesarean means always a Caesarean.

Year.	Total No. of cases.	Percentage re : termination.						
		Spontaneous	Extraction of breech.	Induction.	Forceps.	Internal version.	Craniotomy.	Lower segment Caesarean.
1933	57	38·6	3·5	12·2	22·8	7·1	7·1	8·7
1934	62	45·1	...	19·4	19·4	11·3	1·6	3·2
1935	59	55·1	...	11·6	17·4	5 8	4·3	5 8

Percentage as to result.

Year		Spontaneous	Extraction of breech	Induction	Forceps	Internal version	Craniotomy	Lower segment Caesarean
1933 (57)	L.	68·2	...	71·4	23·1	...	...	60
	S. B.	27·3	100	28·6	59·2	100	100	20
	D.	4·5	...	...	7·7	...	...	20
1934 (62)	L.	78·6	...	75·0	50·0	...	...	100
	S. B.	14·3	...	...	41·7	85·7	100	...
	D.	7·1	...	25·0	8·3	14·3	...	...
1935 (69)	L.	89·5	...	62·5	75·0	50·0	...	100
	S, B.	2·6	...	12·5	16·7	50·0	100	...
	D.	7·9	...	25·0	8·3	...	...	...

Reviewing the comparative statistics, the maternal mortality is high for 1935, one of septicaemia in a lower segment Caesarean section in a trial labour case, purely a hospital patient; another under version in a case admitted late in labour where craniotomy was performed on the after-coming head. The maternal death in 1933 under lower segment Caesarean section was due to septicaemia, a case already interfered with by a *dai*. This history was elicited later on.

The cases of still births were due to intracranial haemorrhage, majority in generally contracted pelvis. Even the foetal deaths may be attributed to the same cause, some in forceps deliveries and others in premature induction. The minimal deaths under forceps in the succeeding years show us the value of proper choice of cases.

Cases also tend to come early in pregnancy under medical supervision, because of the better realization of the value of antenatal clinics by the public. Each obstetric case has its own individual peculiarities and with experience these several points when thoroughly probed into, may, we hope, lead to still better results in the near future. The deaths under version are relatively far too many. The cases with live children have been those in cases of flat pelvis. Amongst the others this method has been adopted as an alternative to lower segment

Caesarean section, where the foetal distress has been imminent even before version was attempted.

Amongst the lower segment Caesareans for posterior parietal presentation in flat pelves and others, all babies were alive except two in 1933.

Now, we will see the difficulties encountered in the various types of contracted pelves, mainly in generally contracted and flat.

Cases of generally contracted pelves.—The perfect fit of the head in this type of pelvis with the start of labour, gives one the false impression of compatability as regards the size of the foetal head and the maternal pelvis. Overlapping in such cases is a source of anxiety. Great hindrance to the progress and forward rotation of the occiput is encountered if there is in addition a narrowing of the transverse diameter of the brim. The favourable factors which aid natural delivery are a round bag of membranes, softness and elasticity of the cervix, a soft, mouldable and well flexed head, and the factor of strong uterine contractions. In some cases, the density of the bag or its flimsy adhesions to inner wall of the uterus allows it to remain intact even beyond its time, and if this is anticipated and the bag ruptured in time and flexion ensured, a happy ending has occurred. After the rupture of the bag, the further dilatation of the cervix is carried out by the head, and continuous resistance to the vertex throughout the cavity accounts for fair amount of moulding. The tendency to funnel-shape of such types of pelves, means delay at the outlet and the case has to be delivered by forceps Hence the stress and strain on the vertex is tremendous and we meet in this category several cases with intracranial haemorrhage. In some of these cases, a short cord is another contributory factor in delaying further progress of the head. The false idea one forms at seeing the head at the vulva and applying forceps is wrong. A timely P. V. examination may sometimes reveal the caput at the outlet whilst the greatest diameter is still at the brim.

The majority of cases of still births with forceps fall into this type of pelvis.

As the generally contracted pelvis is of the nature of developmental error, the commonest accompanying factor is at times found to be one of inertia. We have, very fortunately for us, not seen this as a contant factor.

The effective sum total of the uterine musculature would mean the rhythmical action of all the individual fibres—and this forms a harmonious whole and aids the delivery of the vertex. In some of our cases, the pains have been present, but there is great delay; probably an irregular muscular action is set up, so that some fibres, simply grasp

round the child and others try to expel the foetus, thus a *vis a tergo* is the result.

In several cases of flat as well as generally contracted pelves, at an early stage, invariably after the rupture of membranes, the whole uterine contour becomes markedly stretched, *i e* , there is set up a stretched condition of the longitudinal fibres, showing marked activity of those fibres against the spasmodic resistance of the circular fibres. Whether this state means a sign of extra resistance, and hence a tedious labour, or if it is just accidental, is a debatable point. In one case we have observed the same sort of appearance in two successive labours, whilst in another this state was absent in the succeeding pregnancy.

In about a few cases of generally contracted pelves, including one of a generally contracted and flat pelvis, this state has been observed. Those where the bag was intact, have had live children, whilst the others with the absence of bag, were cases of still births, two out of three ending in forceps.

In others, the absence of the bag has brought about the spasm of the uterus round the foetus and this apposition has sometimes delayed matters and the cases had to be ended by instrumental delivery.

The follow-up of cases with definite stress, shows various manifestations of intracranial haemorrhage, as twitchings, a definite wizened appearance of the foetus, inability to suck, hence drop in its weight, pyrexia, a sustained icteric tinge and haemorrhage from the mouth, nose, etc. Some of the babies with fits have gone home cured, but it is difficult to guage about their later legacies as regards epilepsy, etc.

Cases of flat pelves.—Here the case starts with non-fixity and even with full dilatation, the head remains at the brim. P. V. examination shows an inclination to anterior fontanelle being low, and with the rupture of membranes, the head quickly rushes out.

Though in the mechanism of a flat pelvis, the vertex tends towards extension, still, flexion during labour has brought about a quick and happy termination. Probably the manipulation just manages to bring the bi-temporal into the antero-posterior diameter of the brim. A high and prominent promontary leads to deep side bays, where the loops of cord can easily prolapse. This complication may intervene especially in those cases with a long cord, or an apparently long cord, with a low insertion of the placenta.

Timely P. V. examination near full dilatation will obviate such an accident, or prevent a still birth in time. Pains have been always of

fairly expulsive force in these types of cases. The adoption of Walcher's position in time has overcome minute disproportion.

Posterior parietal presentation, we think, occurs in the second stage, if mismanaged, and a timely examination at an early onset may prevent such a complication. Posterior parietal presentation means absolutely no further success as far as the trial is concerned, as this position is never seen to turn to an anterior parietal presentation either by Nature's efforts, or our own. Hence, with a live child, the case may be turned into a breech and delivered as such. Version, we believe, plays a prominent role in well chosen cases, as in these types of cases, the after-coming head gives very little trouble and hence the foetal results are satisfactory. The cause of still-births in our series was due to this treatment being adopted quite late in labour, as an aid to quicken delivery and interference was called for after signs of foetal distress.

The osteomalacic pelvis.—This type is just mentioned, as some of the cases of disproportion belong to this type. Here, in the early stage, the flatness is marked, hence, all the difficulties are encountered as in a flat pelvis, and later on, the difficulties arise according to further contraction of the various diameters.

The generally contracted and flat pelvis.—Counts in favour and against both the types, contribute towards the respective termination of a given case. These cases have to be watched with still greater care.

I may touch lightly on the subject of the place of premature induction in cases of pelvic disproportion. The primiparae, we think, should have a full trial of labour at full term. Even if by a normal vaginal delivery or by low forceps delivery, the baby is still-born, we think that it is quite justifiable.

In the 2nd pregnancy, success may be attained by premature induction, provided the correct date as to the period of pregnancy is elicited by encouraging the patient to attend regularly the antenatal clinic. The character of the first labour, as well as the size and weight of the previous child is helpful.

The cases for premature induction, after selection, are induced in the following manner: The patient is given a dose of mixt. ol. Recini 1 ounce followed 2 hours later by an enema and 2 hours later by a dose of quinine (5 grains). One hour later, under all aseptic precautions, the membranes are artificially ruptured. Plain medical induction has never been found to be successful in these cases; hence the supplementary aid of rupture of the membranes. The liquor amnii is allowed to completely drain away and the cervix is also slightly stretched. Abdominal binder and a Buist's pad is given after flexing the head. The

second quinine dose is repeated 2 hours later, and followed by injection of pituitrin ½ c.c., if no labour pains. The labour has progressed safely within 18 to 24 hours. Some cases have started pains before the injection of pituitrin. One case went over 42 hours and delivered by a low forceps, baby living. Several of our cases of still births, in primi and multiparae, have had premuture induction with babies living in their succeeding pregnancies. For example, the following case is a good example.

S. K., 1st and 2nd natural deliveries; 3rd transverse, internal version; baby living; 4th craniotomy, aftercoming head; 5th and 6th, premature inductions, both babies living. This time, on 11th December 1935, has had premature induction, child living.

A few cases of still births and foetal deaths are due to intracranial stress. It has been mentioned that a premature baby because of the soft head is more liable to intracranial haemorrhage than a full term child.

The whole aim is to better our results; to achieve which, the mainstay is the antenatal clinics. The regular weekly attendance of the patients and building up of our clinical data from all the salient points noticed, and after the careful sorting out, to chalk out the selective line of treatment, with minimum of danger to mother and child, is carried out in a systematic manner at the antenatal clinics Further help in some cases specially is required. as for instance, examination under anaesthesia of very nervous patients.

The anomalies in the pelvic measurements, the consistency of the foetal head, and last but not least, the uterine forces, are prime factors in contributing towards the normal or abnormal termination in a test of labour. This triple co-operation heralds a happy termination.

In conclusion, we may say that the cases have yielded satisfactory results. The temptation for long trials was to aid vaginal delivery as far as possible. The still birth in forceps and version are more in primiparae, where their age does justify such tests, as unexpectedly favourable terminations have been noted in several cases. In the second pregnancy, after knowing the character of the first labour, a better result has been achieved. The points of prognostic importance are the following:—

Correct judgment as regards the degree of disproportion;

A certain margin of safety for the moulding;

Apparently greater disproportion met with in occipito-posterior positions and in cases with low insertion of placenta and definitely un-flexed cases;

Delay in non-dilatation ; so also the saggy contour of the bag, *i.e.*, norrow above and round below ;

Posterior parietal presentation in flat pelves ;

Caput formation in early labour ;

Presence of a contraction ring.

Before I conclude, I beg to acknowledge the debt of gratitude I owe to Dr. Jhirad, the Chief Medical Officer of the Cama and Albless Hospitals for allowing me free access to the statistics collected by her on this special subject and also for giving many helpful hints in the arrangement of my facts and figures.

Cama and Albless Hospitals, Bombay.

Cases of Contracted Pelves and Pelvic Disproportion for the years 1933, 1934 & 1935.

—	Total Number.	Disproportion.	Flat.	Generally Contracted.	Gen. Contracted and Flat.	Osteomalacia.	Result. Mother. L.	Result. Mother. D.	Result. Child. L.	Result. Child. S.B.	Result. Child. D.
1933											
Spontaneous	22	14	2	1	...	5	22	...	15	6	1
Extraction of Breech ...	2	1	1	...	...	...	2	...	...	2	...
Induction ...	7	2	1	2	...	2	7	...	5	2	...
Forceps ...	13	4	2	4	...	3	13	...	3	9	1
Internal Version ...	4	...	1	1	...	2	4	...	...	4	...
Craniotomy ...	4	3	1	...	...	...	4	...	...	4	...
Lower Segment Cæsarean ...	5	3	...	1	...	1	4	1	3	1	1
Classical Cæsarean ...	28	1	2	2	3	20	28	...	28	...	...
1934											
Spontaneous ...	28	5	10	7	4	2	28	...	22	4	2
Induction ...	12	2	3	4	1	2	12	...	9	...	3
Forceps ...	12	4	2	4	1	1	12	...	6	5	1
Internal Version ...	7	1	4	2	...	...	7	...	...	6	1
Craniotomy ...	1	1	...	...	...	...	1	...	...	1	...
Lower Segment Cæsarean ...	2	...	1	...	...	1	2	...	2	...	...
Classical Cæsarean ...	32	3	8	1	2	18	32	...	29	...	3
1935											
Spontaneous ...	38	13	11	7	3	4	38	...	34	1	3
Induction ...	8	3	3	...	1	1	8	...	5	1	2
Forceps ...	12	4	2	4	2	...	12	...	9	2	1
Internal Version ...	4	...	3	...	...	1	3	1	2	2	...
Craniotomy ...	3	...	2	...	1	...	3	...	...	3	...
Lower Segment Cæsarean ...	4	1	1	...	1	1	3	1	4	...	...
Classical Cæsarean ...	45	4	6	6	...	29	42	3	41	1	3

SOME GENERAL PRINCIPLES IN THE MANAGEMENT OF LABOUR COMPLICATED BY PELVIC DISPROPORTION.

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The treatment of labour in the presence of pelvic disproportion is a subject as old as the art of Obstetrics and is one that is of absorbing interest to the general practitioner no less than to the obstetrician, and will ever continue to be so. It is one of the emergencies of practice both in the urban as well as rural areas which he has to face whether he is prepared for it or not, and which many a time makes or mars his reputation. It is, at the same time a matter which presents the greatest of difficulties and requires more art or practical skill than any other in the field of the practice of medicine. Prompt and correct judgment born of experience alone, will make for the best results, whatever the amount of theoretical knowledge one possesses. I propose to consider certain general principles in the treatment of this condition as met with in hospital practice in Madras.

Pelvic contraction of the pronounced type, which proclaims itself by the presence of marked deformities, is hardly ever met with in South India, because severe forms of rickets do not occur and osteomalacia is almost non-existent. But the minor degrees of contraction are common and it is well known that these are the cases which are most difficult to deal with, because recognition of the existence of contraction and its exact degree is not at all easy. Many a time one comes across cases of obstructed labour due to disproportion in cases where previous labours have been spontaneous, a slight increase in the size of the head due to postmaturity or other causes being quite sufficient to cause difficulty in these border-line pelves. A correct knowledge of the nature and degree of disproportion between the pelvis and the head is most essential before treatment can be undertaken The question, what is the criterion of contraction, is not easy to answer. External pelvimetry gives one only a very rough idea of the size or shape of the pelvis. To my mind, pelvimetry finds its greatest usefulness in the field of compilation of statistics of disproportion and when you know that measurements taken by two different observers, experienced observers, on the same patient may show a difference of as much as ½"—nay, even when the observations made by the same person on two different occasions may show a similar disparity, you know that conclusions based on such data are liable to a fairly wide margin of error. A knowledge of the average measurements in a certain locality or among a certain community, gives hardly any better information, for what we have to find out in any particular case is not what the average outcome is, but whether that particular

head is going to pass through that particular pelvis. The diagonal conjugate is in actual practice difficult to measure correctly except when the promontory is very prominent and in the prime gravida particularly so, without the use of an anaesthetic, and when obtained, is not always reliable because the smallest diameter of the inlet may in some cases be slightly above the true promontory, the plane of the brim being in such cases more oblique than normal. X-Rays have been made use of in recent years to gauge the pelvis as well as the foetal head to a fairly correct degree of accuracy, but these measurements are not the only factors that count. The strength of the uterine contractions, the degree of ossification of the skull bones, the extent to which the head can mould and adapt itself to the pelvis, the mental fortitude of the patient, these are other points which might make all the difference between a spontaneous and a difficult labour and are essential to know in every case. Postmaturity of the foetus where the head is bigger and less mouldable than an average sized one, is not easy of discovery from the history in the average hospital patient. Deflexed attitudes of the head in relation to the trunk, cord round the neck, mild degree of hydrocephalus—all these are other causes of disproportion, apparent or real. The most reliable means of discovering the existence of disparity is by the estimation of the head to the pelvis and this should be done in the later weeks of pregnancy, about the 36th week. The Muller-Muro-Kerr method is most useful and should be done under anaesthesia. If the head goes down into the pelvis easily, there is no disproportion and the case may go on to term and spontaneous labour may be expected. If the disproportion is marked and the head bulges well beyond the anterior surface of the spmphysis, delivery by natural passage is not possible and Caesarean section at term as a set operation is the correct treatment. If the disparity is slight, the alternatives are trial labour at term and induction of premature labour.

Management of Trial Labour.—When the patient is seen first at the commencement of labour and the examination shows a slight disproportion, or when trial labour has been dicided upon after antenatal examination in the last week of preganancy, the patient has to be under careful observation. She is kept in the recumbent position to prevent premature rupture of the membranes. Occipito-posterior positions should be attempted to be corrected by Buist's pads. An injection of morphia with atropin is of great use. Care is taken to see that the bladder and the bowels are emptied. Premature attempts at bearing down are forbidden. Deflexed attitude of the head is corrected by a properly applied binder pinned firmly from above downwards. The nature and regularity of the pains are noted, as well as their effect on the patient. The descent of the head into the pelvis is watched for and if this happens and the greatest diameter has engaged, labour

will terminate naturally or with slight instrumental aid. If the head makes no progress after several hours of good pains or immediately after the rupture of the membranes, a vaginal examination is made. The degree of dilatation and taking up of the cervix, its consistency and dilatability and its mode of application to the head, are noted. If the cervix is hanging loose and the head is above the brim and if at this stage there is found to be over-riding at the parietal bones, there must be disproportion that cannot be got over and labour is terminated by Caesarean section preferably of the lower segment type If there is no over-riding of the parietal bones, the head may yet come down when the membranes rupture. It is at this stage when the cervical tissues and bladder have been pulled up out of the way, that the the Munro-Kerr method of examination gives most information and helps in the decision whether trial labour is to be continued or not Putting patient in Walcher's position in order to get a slight increase in the conjugate, is very uncomfortable for the patient and is rarely of use. A further internal examination is done after a couple of hours of second stage pains, and the situation gauged. Oedema, unretracted anterior lip of the cervix and a large caput succedaneum, are bad signs when the head is above the brim. The geneal condition of the patient and the foetus are criteria on which the decision to terminate the labour can be made, rather than the number of hours in labour.

High forceps, *i.e.*, application of the forceps to the head above the brim, should never be attempted. Traction with forceps with the patient in the Walcher's position has hardly any advocates now.

The lower segment Caesarean section, extra or transperitoneal, has its greatest use in cases of this sort.

Symphysiotomy and pubiotomy are methods which are liable to cause undue and unexpected amount of damage to the mother and permanent invalidism may result in rare cases.

If the foetal heart is inaudible, craniotomy is resorted to. Perforation within the blades of the forceps, allowing a sufficient amount of brain matter to excape just enough to reduce the size of the head to the required extent but no more and then extraction with forceps with the perforator *in situ* is a method which should be better known and obviates the need for using the heavier craniotomy instruments. This method used in Government Hospital for Women and Children is not described in text-books.

Internal Podalic Version followed by extraction has a distinct though limited place in the treatment of contracted pelvis. In multiparous women with previous history of delivery by natural passages, in cases with slight degree of flat pelvis, when slight deflexion of the head is the cause of disproportion, and in cases of primary uterine

inertia requiring urgent delivery, this method is useful. The base of the skull being smaller, can engage better than the vault in slight degrees of contraction and traction on the body gives a purchase on the foetus, the vault moulding through as a result of this But beyond a slight degree of disproportion, the sudden diminution caused by moulding is liable to cause tentorial tears and other intracranial damage.

Lastly I come to a method of treatment which has in recent years been extensively employed, *viz.*, induction of premature labour. In order to be successful, it is to be done at a time about the 36th week of pregnancy when clinical examination shows the head to be of a size just capable of passing through the pelvis without strain or damage. The advantages are, that labour teminates naturally without undue strain on the mother and that the child is born at a time when it has a good chance of living The opponents of this method think that in actual practice the great majority of cases of this sort would have delivered themselves spontaneously or by easy forceps at full term if they were left alone. In other words, induction is done in far too many cases unnecessarily, because there is no means of judging accurately the degree, if any, of disproportion except after Nature has had her full trial Besides, the still births and neonatal deaths taken together give a rate of infantile mortality higher than what it would have been, if such cases had been left alone to come into labour at full term and craniotomy done on cases which do not deliver themselves naturally or cannot be delivered by low forceps. Again the medicinal method of induction fails in more than 50 per cent of cases and the insertion of bougies or other instruments which is the alternative in the rest, carries a distinct element of risk of septic infection. If, after induction by any method, spontaneous labour does not take place and instruments have to be used, the foetus with its more pliable head is liable to more injury.

To my mind, the value of this method in hospital practice in South India is very limited. The great majority of the cases are emergencies, so that there is little scope or opportunity for triying this method. Determination of the exact term of pregnancy is more difficult in ignorant women, many of whom are unable to give the date of the last menstrual period. Some of them object to interference before full term Again children born prematurely do not seem to thrive very well in the hot climate, probably from the greater degree of dehydration that they have to stand. The difficulty of rearing premature children with poor ignorant mothers and unsatisfactory housing conditions is a problem in itself. Trial labour is more satisfactory as it is the more natural method and facilities are present for watching the progress of labour.

PELVIC DISPROPORTION—SOME OBSERVATIONS AND REFLECTIONS.

BY DR. P. VENKATAGIRI, M.D.

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The problem that faces a practical obstetrican is to find out whether a given 'head' will go through a given 'pelvis' or not. Disproportion means want of proportion or being out of proportion (Oxford Dictionary). Usually, "the pelvis of the race fits the head of the race". The heads of the race were getting larger among civilized people but the pelvis of the race did not seem to keep pace with them. The indiscriminate mixed breeding of disproportionate men and women may be a cause of pelvic disproportion. In the great cities of the world, there is a fusion, or rather a confusion of race, mingling various nationalities in various dilutions. Astrology was relied upon by our ancestors to prevent the union of disproportionate men and women. By the study of the "Kutam" etc., we were advised not merely to be content with looking at the face but to look for women with capacious buttocks—"Nithambini" etc. Only the woman with a wide pelvis—with other qualifications of course—was considered the proper type for a mate. At the present day, the compulsory medical certificate system of modern Germany, perhaps, may be considered as a step in the right direction, to prevent the union of undesirable persons. Rickets, modern factory life, poverty, the stress and strain of modern civilization, are some of the contributory factors of pelvic disproportion. Very early or very late marriages with marked differences in the age of the couple, may have their own retributions, especially the dangers and difficulties due to pelvic disproportion. Postmaturity is another factor in the causation of pelvic disproportion. Overfeeding of the pregnant woman, especially in the last three months of pregnancy, by an over-jealous husband or mother, is another cause. The hyper-ossified head, as a result of the administration of foods rich in calcium, may refuse moulding of the head to the desired extent and causes disproportion in some cases. Strikingly marked pelvic disproportions may be due to congenital or acquired diseases of the pelvic bones, the pelvic joints and the spine—such as rickets, osteomalacia, tuberculosis, etc.

It is no doubt quite obvious that the foetal head is the best pelvimeter to find out whether a given head will go through a given pelvis, but that does not mean that pelvimetry must be neglected or consigned to oblivion. It will very often give us very important and reliable clues as to the nature of the pelvic contraction we are dealing

with. It is the duty of the practitioner to study the average size of the pelvis and that of the foetal head at birth in the district or the province where he is going to practise obstetrics.

The following may be taken as the average Madras pelvic measurements, in round number, as the result, of the average of 2,000 (Madras) consecutive cases.

	Average South Indian woman.	Average European woman.
Interspinous	9 inches	10 inches
Intercristal	10 "	11 "
External conjugate	7 "	8 "

The Poona measurement (as given by Lt. Col. Hamilton-Fife of the Poona Medical School) of the Deccan woman is as follows:

Interspinous	$8\frac{7}{8}''$
Intercristal	$9\frac{7}{8}''$
Exernal conjugate	$6\frac{7}{8}''$

These measurements are shorter than the European textbook measurements by about an inch all round. It may be stated as a general proposition that the external false pelvis measures *one inch less* than the similar measurements in the European; that the true pelvis measures half an inch less than the similar European measurement, and that the foetal head at birth measures one quarter of an inch less than the similar measurement of the European foetal head. Most women, of the hospital class, at any rate, with an external conjugate ranging between $6\frac{1}{2}''$ to $7''$, very often have normal labour, thanks to the comparative smallness of the head. After all, it is our duty to individualise each case with a view to find out whether a given head will go through a given pelvis—whether the head of the race will go through the pelvis of the race during labour. This is acquired by constant practice, steady observation and the exercise of mature judgment. Alas, how few of us possess these, even after years of practice! It has been observed that cases prepared for Caesarean section for so-called pelvic disproportion, delivered in the stretcher on the way to the operation theatre or returned back from the theatre to the delivery board because the head was already low down and visible at the outlet. Such is human judgment when one is anxious to do a Caesarean. It

has become the fashion with some class of obstetricians to perform Caesarean when their inclination points that way. Please remember that after all said and done, a Caesarean section is a deforming operation—performed when you must, and abandoned if you can—in favour of other methods. A certain Maternity hospital in Manchester, performed in one year about 126 Caesarean sections in about 1,000 cases of labour (excluding abortions). This hospital has or had about 20 doctors on its honorary staff, whereas the Rotunda Hospital, Dublin, did only 6 primary sections for over 2,500 intern and nearly as much extern maternity cases in the same year. Commenting on this large increase in the number of Caesarean section cases, the Registrar says that one would think that the number of craniotomies would have almost disappeared, but the facts are exactly the opposite. It is a case of more doctors, more Caesarean sections—more disproportions (?) There cannot be such glaring disproportion between the Manchester and the Dublin pelvis. The Master and the Assistant Master at Rotunda bring their great experiences to bear upon their cases and the result is few Caesareans. Here is an example of disproportions becoming less and less as the mental or 'judgment' proportions become more and more. It would also appear that the methods of management of pelvic disproportions with a certain class of obstetricians vary according to their inclinations and environment, the glamour of performing a large number of spectacular major operations in a first class operation theatre amidst an admiring crowd of students, midwifery nurses and post-graduates.

Inspite of the many varieties of contracted and distorted pelves described in text-books, in actual practice even in large maternity centres, you do not meet, in South India at any rate, such curiosities. In this connection, permit me to point out that there are not even sufficient number of specimens of such distorted pelves available for distribution to the various teaching centres of the world, hence the necessity for the supply of plastic models in teaching institutions.

Minor degress of pelvic disproportions are always with us, and it is difficult to estimate the percentage of the cases in the mass of the population. These cases of minor or slight degree of pelvic disproportion will test the skill and judgment of the obstetrician. In the majority of instances, when the forces of labour are properly harnessed, directed and managed, natural delivery will be the result. The head will negotiate the pelvis and the woman will be able to deliver herself. If there is delay and if the foetal or maternal conditions require assistance, such help may be rendered by the application of forceps when conditions are pointing to that operation.

Sometimes there may be delay firstly in the engagement and econdly in the advance of the head, due to causes other than pelvic dis-

proportion, such as cord round the neck, short cord, a hand on the side of the head or neck, incomplete flexicn or incomplete extension of the head, over-distension of the bladder and loaded rectum, and very rarely the presence of tumours in or outside the birth canal. Each case must be judged on its own merits and assistance rendered as required after a careful examination under chloroform, if necessary.

Induction of labour in pelvic disproportions.—There are at present a great many unnecessary inductions, just as there are a great many unnecessary Caesarean sections. Something could be learned from inductions but nothing was to be from Caesarean section (Dr. J. S. Fairbairn). Induction as a method of treatment is rarely done in Madras for very many reasons. Very often the suitable cases for induction do not come in or seen in the proper time. The results of induction of labour before the 36 weeks of pregnancy are not favourable in hot Madras, so far as the child is concerned. The mother is very often indefinite or ignorant about the duration of pregnancy. Among the hospital class of patients, it is very difficult, if not impossible, to rear up a premature baby. Very often you cannot foretell what the driving power of the uterus can do in the matter of the moulding of the head and its delivery. Obstetricians with large maternity experience do know that very often in those very cases that are allowed to go to term, natural delivery has taken place and that too after a comparatively short labour. When, however you decide on induction, the best method is to puncture the membrane and the time is 36 weeks or better still 38 weeks if possible, as judged by you when the foetal head can just be pushed into the pelvis.

Pubiotomy and symphysiotomy for pelvic disproportions are operations that have no future before them, though some doctors even now perform them when their initial judgment have given them away. Those who have attained high technical skill, do sometimes claim that pubiotomy, when carried out in good surroundings, is better than that deforming operation, the Caesarean section.

Version. (*a*) Cephalic version in pelvic disproportion: The advantages of cephalic version even in the multipara cannot be denied. In the primi, it is helpful to estimate the disproportion if any, besides the other advantages of the cephalic presentation. Always try cephalic version when any other part of the foetus presents at brim if you have the privilege of examining a pregnant woman in the last trimester of pregnancy, except when the breech presents at the brim in a flat pelvis or in a case of haemorrhage.

(*b*) Internal podalic version. Those who have a great admiration for Potter and those who have attained very great skill and subscribe to

the rule, " when in doubt, do an internal podalic version, and deliver," have been able to show very good results without endangering the mother or child by the timely performance of this operation, which in clever hands looks like a 'sleight of hand' feat.

Summary.

1. That the absolute types of plevic disproportion are very rare in South India.

2. That the practice of rush into Caesarean section for any and every case of disproportion only exhibits the want of proper judgment and skill on the part of the obstetrician.

3. We learn much more from 'trial labour' than from induction ; We learn next to nothing from Caesarean section.

4. Pubiotomy and symphysiotomy are not recommended for adoption by the general practitioner.

5. In cases of doubt, you are advised to try internal podalic version in the absence of contraindications

Reference.

1. The shape of the pelvic brim as a determining factor in childbirth (De. Kathleen Vaughan) : B. M. J., Nov. 21, 1931.

2. The Obstetrical problem of contracted pelvis : B. M. J., May 1931.

3. Kama Suthra by Vathsayana, English trans.

A MODERN TREATMENT OF CASES BROUGHT INTO THE HOSPITAL WITH A RUPTURED UTERUS OR THOSE REQUIRING CAESAREAN SECTION WHO HAVE BEEN INFECTED BEFORE ADMISSION.

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During my student days we were taught never to do a Caesarean section on a patient who had been examined and interfered with before admission into the hospital on account of the sepsis which was sure to result, but we cannot carry out this rule, and always endeavour to save the two lives entrusted to us – often with disappointing results,

because sepsis and peritonitis so frequently follow, claiming the life of the infected mother.

When travelling in Syria, I visited the Beiruit University Hospital, where they face the same kind of infected maternity cases that we do, and discussed this question with Dr. Dorman, head of the Obstetrical Department. He said they had reduced their mortality greatly by following a new procedure, that is, of leaving a drain in the uterine cavity through the abdominal wall. We have not as yet done this in cases of women who were infected before admission and needing a Caesarean, but in cases of ruptured uterus, the same thing can be done. The abdominal incision is made, foetus and placenta delivered, and the abdominal cavity thoroughly cleansed and all clots removed. If the tear in the uterus is very long, a few sutures may be inserted, making a small opening. The peritoneum covering the uterus is then sutured to the abdominal peritoneum with catgut sutures, a drainage put into the uterine cavity, and the abdominal incisicn closed with the exception of the opening leading into the uterus.

I regret that I have not a large number of cases to report. The first case we tried it on, made a fine recovery and went home quite well. On pelvic examination before her discharge the uterus seemed freely movable, but in view of future pregnancies we have advised her to return to have the abdomen opened, when the uterine scar will be *examined and treated to make it* safe for another pregnancy. We would consider a Caesarean section necessary in her case in the future.

The operation takes about 20 minutes and the patient is saved from shock and I believe this will be the means of our saving many patients whom otherwise we might lose.

Report of two cases done so far are given below :—

Case 1.

Name V., II para, admitted 17-8-35. Uterus ruptured 12 hours ; T. 98·4°, P. 110, R. 30, B. P. 110/60. Cold, clammy, restless.

Examination.—Acutely tender, tense abdomen. Foetal parts easily felt. Uterine body not outlined. Foetal heart absent. Full dilatation, head on perineum, fixed.

Diagnosis.—Ruptured uterus (complete)

Preparation.— Subcutaneous saline and Heroin gr. 1/12.

Operation.—Under local (novocaine), Heroil and light ether: Midline incision —Condition found:—complete rupture of uterus, rent 4″ long in right lower segment. Uterus contracted in hard ball to left. Body of baby and placenta free in abdomen. Head still fixed in pelvis. Moderate amount of blood in peritoneal cavity.

Procedure.—As baby lifted from cavity, the head was dislodged from the cervix and a large artery began to bleed profusely. This was secured and tied. Abdomen was cleaned out. Parietal peritoneum was sutured except for about 3 inches. Edges of uterine tear were lifted and sutured to the peritoneum. Uterine body was packed with gauze. Peritoneal cavity drained with two large tubes. Incision closed.

Operation lasted 20 minutes. Intravenous glucose, etc.

Post-operative course—Antistreptococcus serum given. Dressings done daily. Packing removed after 18 hours and replaced by larger drainage tubes into the uterus Profuse purulent drainage continued for days through the vagina and abdomen. Had mild peritonitis. Developed parotid abscess which was opened and drained. Tubes gradually shortened and made smaller. On discharge two months later, uterus was involuted, vagina scarred, cervix closed, eroded. Could not feel that the uterus is attached to the abdominal wall. Advised return and freeing it.

Case 2.

Name C., VI para, admitted on 24-9-35. T. 99°, P. 120, B. P. 100/50. Uterus ruptured for 9 hours. Foetal parts easily felt Rigid tender abdomen. Presenting part had receded. Old blood per vagina.

Diagnosis.—Complete rupture uterus.

Operation.—Abdomen full of blood, baby free in abdomen, uterus contracted to one side. Very long tear in lower segment entirely across.

Same procedure as other operation. 25 minutes duration for operation.

Condition of patient excellent for 24 hours. Died suddenly apparently of pulmonary embolus.

LOWER SEGMENT CAESAREAN SECTION IN THE TREATMENT OF PELVIC DISPROPORTION.

By P. V. Venkataswami, M.B. B.S.,

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I have chosen the lower segment Caesarean, also known as low cervical Caesarean, or laparo-trachelotomy, as the subject for my paper to-day for several reasons.

The operation is of comparatively recent advent and occupies a very prominent place in the treatment of disproportion which happens to be the main obstetric problem chosen for discussion by this epoch-making Congress.

It is an operation attended with very gratifying results to the mother as well as to the infant in suitable cases ; is at the same time, very liable to be abused with disastrous results in inexperienced and unskilled hands. And lastly, it is an operation which, in my opinion, has not been sufficiently utilised in many of our sister institutions in this city and elsewhere.

I am only touching upon some aspects of this vast subject.

Nature of the operation.—The abdominal cavity is first opened and the uterine cavity is reached by incising the loose peritoneal investment and then the actual wall of the lower uterine segment The letter is well formed only after some hours of active labour. It has been claimed by some that the procedure is extra-peritoneal. I do not think it is so, because one has to get through the peritoneal sac and thus expose it to septic contamination. It is no more extra-peritoneal than an abdominal myomectomy or the extirpation of a broad ligament tumour. The real extra-peritoneal approach is attained by Latzko's technic which does not expose the pertitoneal cavity at all, but is decidedly more difficult to perform and one that is attended with complications.

I wish to emphasize this point ; otherwise to call it extra-peritoneal is to create a false sense of security in the surgeon's mind and thus stand in his way of exercising sufficient care in the packing off of the intestines and protecting the general peritoneal cavity before actually opening into the potentially infected lower segment and spilling its contents.

Its place in obstetrics.—Its major role is in the management of the moderate degrees of disproportion, which degree, we all know, is the

most trying to tackle, the treatment of the extremes, namely, the minor and the major ones being quite simple. 'The trial labour' or 'test labour' is employed only in these moderate degrees and the low cervical section steps in when test labour has failed to drive the greatest diameter of the head through the brim of the pelvis. If, however, test labour has successfully driven the head into the true pelvis, vaginal delivery could be effected by forceps.

There is no general agreement even amongst the leading obstetricians on a time limit for the test labour. One can understand that, because, successful labour depends not upon the time factor alone, but others, like the pains, malleability of foetal head, relaxation of the pelvic ligaments and joints, etc. It has been shown in recent times by bacteriological and histological studies of uteri in labour that the uterus is sterile for about 6 hours from the onset of labour and subsequent to that, ascending infection commences. Classical Caesarean is the operation of choice within this period when the uterus is still sterile. Two to four hours of *good pains after rupture of membranes* may be considered sufficient to guage the effect of trial labour. At this stage, the time is long past for the classical operation.

Here, I wish to strike a note of warning. If the patient is not seen till after many hours in labour, with membranes ruptured long ago, or attempts at delivery made by hands of questionable cleanliness or skill, that patient is not a case for low cervical section, particuarly when symptoms of infection such as an appreciable elevation of temperature, rapid pulse and perhaps a foul-smelling discharge are present. It is the performance of this operation in this dangerous class of cases that has marred the fair name of this splendid operation. In such cases, a Porro's section, if a multipara, or a conservative vaginal mode of delivery in a primi, even if it should assume the form of a craniotomy on a living child, is to be preferred. The claims of Porte's exteriorization operation and Latzko's completely extra-peritoneal operation have been urged in these cases, but I am afraid their safety has not been proved beyond dispute.

Before the advent of test labour and lower segment Caesarean, "high" and "floating" forceps operations were very much in vogue, attended of course, with very high maternal and foetal mortality and morbidity, and it is a matter for gratification that they are now relegated to the list of the obstetric feats of the past.

Advantages are many.

It is applicable in labours of much longer duration than is safe for the classical;

Minimises the danger of subsequent peritoneal sepsis from the uterine cavity, by virtue of the dependent position of the line of suture which is done in many protective layers and more securely;

In conjunction with the test labour, minimises the number of Caesareans and inductions of premature labour;

The post-operative period is comparatively smooth;

Does away with post-operative adhesions as the suture line during involution lies low down, even behind the bladder; the omentum and the intestines are far removed from it;

Minimal chances of subsequent rupture because of the firmer union ensured by the passive nature of the lower segment after labour. Even if such a rupture should occur, it occurs during labour and hence easily recognised and treated; and

Saves also many foetal lives indirectly by reducing the number of destructive high forceps and craniotomies.

Disadvantages.—The only disadvantages appear to be—

That it demands a higher degree of judgment and surgical skill than the classical;

A second attempt on the same lower segment may be more difficult on account of the fixity of the peritoneal coat in the region of the previous operation; and

If rupture should occur in a subsequent labour, it may involve the bladder, particularly, if the vertical incision had been employed.

Routine application of the operation,—A pertinent question then arises: why not do the low cervical as a routine and scrap the classical operation altogether? As a matter of fact, a few centres in America do adopt this operation whether the patient has been in labour or not. But I know of a few cases where a lower segment was attempted before a good lower segment was formed, and the end result was a poor compromise between the upper and lower segment operations. Classical section is still the operation of choice, when it is elective.

Some points in technique and post-operative management:

(1) It is a wise precaution to institute a thorough antiseptic toilette by dry shaving the vulva and painting with violet green or mercurochrome, by a low but copious douche and a free paint of one of these antiseptics for the vagina.

(2) It is essential that the bladder should be quite empty. Catheterisation is best done after the patient is anaesthetised and before the sterile towels are laid on : otherwise even a small quantity of urine renders the organ unduly prominent and throws it annoyingly into the field of operation, right against the line of uterine incision.

(3) In some cases, even an empty bladder is drawn up considerably with the stretching of the lower segment, and is found filling the major part of the parietal peritoneal layer of the abdominal wall. In these cases, the peritoneal incision is first started high up and proceeding downwards, it is then carried laterally and downward to one side, from near the top of the bladder parallel to the side margin of that viscus—I mean a para-vesical incision. One can now easily displace the bladder well to the opposite side and get it out of one's way.

(4) Trendelenberg 's position is not necessary, except to combat any drop in the blood pressure in spinal anaesthesia cases. It may, on the other hand, carry any contaminated uterine contents towards the upper abdomen.

(5) The transverse incision with a slight curve directed upwards at either end, to avoid the uterine vessels, if the incision should tear and extend during the delivery, has been found eminently satisfactory.

(6) The foetal head can be lifted out with a hand passed behind the occiput or levered up with a single blade of an obstetric forceps, aided by fundal pressure.

(7) The lower segment is stitched up in four layers, all with catgute : the first is a continous one, for the muscular wall, avoiding the endometrium though it is sometimes difficult not to include the endometrium in badly thinned out lower segments. The second suture unites by a continous or interrupted stitch the endopelvic fascial layer. The third brings the upper reflected flap of peritoneum well down to cover the suture line and the last one lifts up the lower flap and with it the bladder to cover the upper flap.

(8) We believe in the efficacy of antistreptococcal serum as a prophylactic against puerperal sepsis. It is administered in 30 c.c.'s dosage on the first day and repeated next day—20 c.c.'s in late cases.

(9) The bowels are moved on the second day—a day earlier than in our other abdominal cases—by castor oil in the morning and 3 hours later by a pituitrin and eserine injection and an enema.

(10) We have recently started injecting ½ c.c. pituitrin 6th hourly for 48 hours. I can confidently recommend this practice because, the

post-operative distension and discomfort have been negligible, when compared to our previous cases. It also aids in the involution of the uterus, which process is usually sluggish after Caesareans.

Statistics.—I am herewith presenting the statistics concering a series of 32 consecutive lower segment Caesareans which fell to my personal care as an assistant. I am quite aware that this number is much too small to be of high statistical value, but all the same, it does indicate to some extent as to how we stand with regard to this operation.

Indications.—As many as 26 cases were undertaken for disproportion (2 of which were cases with obliquely contracted pelves and two with post-maturity of foetus). There was 1 case of extended breech in an elderly primi, 1 of concealed accidental haemorrhage, 1 of badly cicatrised vagina admitting only one finger, 2 were cases of threatened rupture of uterus with head high up and the last one was for contraction ring.

Anaesthesia.—22 cases were done under spinal, with one death on the table attributable to this mode of anaesthesia, and 10 under chloroform-ether mixture, by the open method, or a combination of spinal and general. As far as my experience goes with spinal anaesthesia in Caesareans in general, about 50 cases under spinal, I feel that it is not quite a safe anaesthetic for this operation. I have known 2 cases dying on the table and two others getting apnoeic and revived with considerable difficulty, whilst in scores of spinal anaesthesia in other operations, I have encountered no such trouble.

Foetal mortality.—There were 3 neonatal deaths, and 1 still birth ; 1 of the neonatal deaths was due to prematurity and the still birth occurred on account of accidental haemorrhage. Excluding these 2, the corrected foetal mortality is 2/32 or 6·25 per cent.

Maternal mortality.—Five mothers died, giving a gross mortality of 15·3 per cent. One death was due to spinal anaesthesia, the mother expiring as the foetus was being extracted and the other died 15 minutes after the operation was finished. This was a bad case of accidental haemorrhage and would have died in any case, whether a classical operation or a hysterectomy or a vaginal delivery had been done. These two excluded, the corrected mortality works up to 9·4 per cent.

One died of peritonitis on the 3rd day ;

Two others died of uterine sepsis and exhaustion on the 7th and 13th days.

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This figure may at first sight strike one as a high maternal mortality figure, but it campares very favourably with the mortality in high forceps and craniotomies taken together, they being the alternative lines of treatment in these difficult cases, not to speak of the terrible foetal mortality associated with them. The figure in these cases is in the region of about 25 per cent (To be exact, the maternal mortality from destructive operations for 6 years from 1929-34 both inclusive, is 18 out of 63 = 28·5 per cent) Lower segment Caesarean is still, I must say, in its infancy in these parts—the first one in the Egmore Women and Children's Hospital was done only 5 years ago. With its increased adoption, with fuller appreciation of its indications and what is more, its limitations, and above all, with the proper choice of cases, one can predict a very bright future for this operation.

To summarise, this is an operation that has, in my opinion, come to stay; is a powerful weapon in our obstetric armamentarium; has its maximum utility in controlled test-labour cases; is best performed rather early than very late; and its actual performance is outside the province of the occasional operator.

In conclusion, permit me to place on record my vrey grateful thanks to my chief, Lt-Col. Plumptre, I.M.S., for his guidance and encouragement in my work and for his permission to utilize the records of these cases.

Mrs. Dadha Bai (*Bombay*). Pelvic disproportion is a subject that calls for definiteness in diagnosis and treatment. It contributes greatly to our maternal and foetal mortality. Though it is the usual teaching that in primiparae, the head should fix during the last 3 weeks, yet we all know how many cases of primiparae with the head floating at the onset of labour, deliver quickly within a few hours with good pains, in fact even quicker than those in whom the head is engaged three weeks before.

Antenatal diagnosis has led to no useful results. The personal factor plays a great part in the treatment. Treatment based on accepted lines has left results far from satisfactory. It is often noted that some cases where difficulty was expected come off quite normally, while others expected to be normal, develop severe dystocia. Trial labour is the only efficient method. Any untoward results in trial labour are not due to the principle of trial labour, but to faulty management of it.

Induction of premature labour is unsuitable for Indian women.

Lower segment Caesarean section has been practised at the Cama Hospital for the last 8 to 10 years, with satisfactory results. It saves many destructive operations; it is avoided in definitely septic cases.

She has given up spinal anaesthesia for Caesarean section on account of fatal accidents.

Dr. A L. Mudaliar (*Madras*). The pelvis varies from country to country and from race to race. To speak of a pelvis in terms of mere measurements is not good from the point of view of obstetric treatment. The one great thing is to guage how far a particular head is going to mould through a particular pelvis. Antenatal supervision is not much helpful. Till the woman has been actually in labour, it is difficult to say whether a patient will need a Caesarean or a pubiotomy or a forceps. There are so many factors to be taken into consideration at the time of labour, *e. g.*, the strength of the uterine contractions, the extent of deflexion that may be present, etc. From that point of view, the idea of trial labour is a great advance in our conception of the treatment of disproportion. It has ended in a very much larger number of natural deliveries and in comparatively few Caesarean sections.

I have given up induction of premature labour. It often results in the death of the child at a later stage after discharge from hospital. I induce labour at term in cases of postmaturity, with purgatives, enema and pituitrin in small doses.

Lower segment Caesarean has got a very definite, but at the same time, a limited place in obstetrics. I would not advocate it in a septic case, nor in a case which has been many hours in labour. The proper indication is when test-labour has just failed; the decision being arrived at, not by so many hours of labour, but only after the membranes have ruptured and after one or two hours of good uterine pains.

I have not found the terrible disasters ascribed to Caesarean section. I have done about 100 to 125 cases and I have not come across a single case of rupture of uterus during a subsequent pregnancy or labour. I have done many 'repeat' Caesareans. Some cases have delivered naturally after previous Caesarean.

The encroachment of general surgeons into the field of obstetrics is largely responsible for the increase in the number of Caesarean sections. Obstetric judgment required a great deal of practice of obstetrics. The simplest operation in the whole field of obstetrics is a classical Caesarean section. I venture to submit that the number of Caesarean sections to the credit of an obstetrician is in inverse proportion to his skill as an obstetrician.

AFTERNOON SESSION.

(2 to 4-30 p.m.)

GYNÆCOLOGICAL SECTION—PAPERS.

THE CLINICAL ASPECT OF PLACENTA PRAEVIA AND ITS TREATMENT.

BY DR. J. CHAKRAVARTI, M.B., M C.O.G.

(Gynaecologist and Obstetrician, Carmichael Medical College, Calcutta ; Visiting Surgeon, Chittaranjan Sevasadan, Calcutta ; Gynaecologist, General Hospital, Howrah.)

Introduction —Placenta praevia has been known since the time of Hippocrates, when it was thought to be a " Prolapse " of placenta. " Praevia " being now known to be due to its situation in the lower uterine segment. Its chief importance lies in liability to cause antepartum haemorrhage in every case

Incidence.—It is very difficult to state correctly the incidence of the condition. The tables show the number of cases in 5 years return in big Hospitals of Calcutta, Madras and Bombay.

Calcutta	...	...	Average	1·2%
Madras	...	...	„	0·6%
Bombay	...	...	„	0·7%
Average Indian	...	...	„	0·83%
BRITISH statistics.		...	Average	1·1%

Roughly it is near about 1 in 100. But the incidence will certainly be little higher if private cases are considered along with those in Hospital.

Classification —The usual classification—central, marginal and lateral—is not clinically correct, as the position necessarily varies in relation to a dilating cervix. Hence, it would be appropriate to define the variety in relation to the condition of the cervix.

Symptoms.—A sudden, spontaneous but painless, visible haemorrhage in the third trimester of pregnancy is the cardinal symptom and pathognomonic of Placenta Praevia. The condition is much more common in multipara than in primipara as shown from the following figures :—

Calcutta	...	...	...	5 : 1.
Madras	...	...	...	8 : 1.
Bombay	...	...	...	7 : 1.
Average Indian		...	...	6 : 1.

Diagnosis.—This can be established only by P. V. Examination should be proceeded with (i) rigid asepsis to mother's part and examining hand and (ii) material for packing. France Burke (Liverpool) has recently been successful to diagnose Placenta Praevia by Amniography.

Differential Diagnosis.—Most important being Accidental Haemorrhage. The latter is associated with pain, shock, tender uterus, presence of albumen in the urine and early disappearance of foetal heart sounds.

N.B.—In the absence of positive findings painless haemorrhage at the third trimester, should be treated for Placenta Praevia.

Prognosis.—This is often uncertain The success depends on the following :—

(i) Condition of the patient.

(ii) Environment—possibility of having accessories for emergency help.

(iii) The skill of the attendant.

(iv) Degree of Praevia.

(v) Postpartum haemorrhages.

(vi) Infection.

Management.—The condition being unpreventable, incidence remains the same. Antenatal diagnosis and treatment yields better result. First, get the patient in proper environment and they are in order of preference—(*a*) Maternity Hospital, (*b*) Nursing Home or (*c*) Private House. Management, in private house, should be avoided as far as possible. If at all necessary, the accoucheur should not have any other emergency case. It should never be done in insanitary surroundings and in central placenta praevia.

In my opinion, cases that usually occur are as follows :—

Group A —Patient not in labour and cervix closed or one finger in multipara.

Group B.—Patient in labour or two fingers dilatation—*Commonest.*

Group C.—Central.

Treatment :—

Group A.

1. If slight bleeding (2 to 4 ozs)—Expectant treatment, particularly in elderly primipara.

Contraindicated in—

(*a*) Full term pregnancy and

(*b*) Placenta covering internal os.

2. If moderate or severe bleeding—Plugging (Old Rotunda method).

This should be preceded with rupture of membranes whenever possible, followed by tight abdominal binder.

If no pain starts—Change plug after 12 to 16 hours.

Group B.

1. If lateral—Rupture the membrane and apply a tight abdominal binder (Best method).. It should never be done in transverse presentation.

2. If marginal—Control bleeding by any of the following methods and remainder of the delivery should be performed slowly.

(*a*) Pressure of half Breech—

(i) If Breech presents—rupture the membrane and bring down a leg.

(ii) If Head or Transverse presentation—

(*a*) Version—External if possible, otherwise Bipolar.

Difficulties encountered in performing version :—

(i) Rupturing membrane.

(ii) Turning the child.

(iii) Finding out leg.

(iv) Pulling the leg—it may slip.

To overcome them a patient may bleed profusely in the hand of a young specialist. In such event, plug the case and treat for loss of blood.

After version, the remainder of the management should be left to nature. Traction, only when the bleeding starts—amount—just sufficient to stop bleeding.

" Motto should be quick version, slow traction and safety of the mother first ".

Labour usually terminates spontaneously from 2 to 6 hours.

(*b*) If head presents and child living—Scalp traction (Willet's). Personal experience very little.

(*c*) Pressure of Hydrostatic bag—Once standard method but now given up. Bag is an obsolete instrument at present in Calcutta.

(*d*) Plugging, Cervico—vaginal—Once favourite but not much popular now. Still it has a place as—

(i) Ambulatory treatment.

(ii) When Bipolar version fails.

(iii) In central Placenta Praevia—when patient's condition is low for Caesarean section.

(*e*) Caesarean section—Indicated in

(i) Rigidity of cervix.

(ii) Elderly primipara.

GROUP C.

Hospital.—Best place.

Good condition.—Caesarean section.

Low condition.—Plug and treat for loss of blood, followed by Caesarean section.

In unfavourable surroundings.—Go through the placenta and bring down a leg.

Patient brought in a collapsed condition.—Treat for shock and loss of blood first. No interference till the patient comes round.

Management of the third stage.—This is essential and important. P. P. H. even of small quantity becomes lethal to a Placenta Praevia which is already exsanguinated.

Morbidity.—Considerable number of cases run a morbid temperature and some of them are definitely septic. Precautionary measures should be taken to cope with it. Average morbidity in Calcutta is 37 per cent., in Madras, 15 per cent. and in Bombay, 19·75 per cent.

Average Indian morbidity—24 per cent.

Mortality.—According to the tables under review, the mortality rate of Placenta Praevia treated in Indian condition and atmosphere is on average 9 per cent.

Calcutta	... ...	11%.
Madras	... ...	13%.
Bombay	... ...	4%.

Carefully scrutinising the returns, one has got to give the credit to the staff of the Nowrosjee Wadia Maternity Hospital, Bombay.

Table No. 1.

CHITTARANJAN SEVASADAN, CALCUTTA.

(*Placenta Praevia 1930-34.*)

Year.	Total L.	Total P. P.	Gravida.		Morbid.	Mortal.		Cause of Death.
			Multi.	Primi.		M.	F.	
1930	800	11	10	1	7	0	10	
1931	1,212	22	17	5	6	3	15	Hæmorrhage ... 2 Sepsis ... 1
1932	1,355	23	20	3	20	2	15	Hæmorrhage ... 1 Sepsis ... 1
1933	1,879	17	15	2	3	3	11	Hæmorrhage ... 2 Sepsis ... 1
1934	2,084	29	28	1	12	1	16	Hæmorrhage ... 1 P. P. H.
Total ...	7,330	102	90	12	48	9	67	

Table No. 2.

CARMICHÆL MEDICAL COLLEGE, CALCUTTA.

Placenta Praevia (*1930-1934*).

Year.	Total L.	Total P. P.	Gravida.		Morbid.	Mortal.		Cause of Death.
			Multi.	Primi.		M.	F.	
1930	412	6	5	1	2	Nil	3	
1931	553	8	6	2	4	2	6	Sepsis ... 1 Hæmorrhage ... 1
1932	756	14	12	2	5	2	9	Heart failure ... 1 ... 1
1933	873	12	8	4	3	1	7	Hæmorrhage ... 1
1934	1,302	9	6	3	6	2	4	... 1 Peritonitis ... 1
Total ...	3,896	49	37	12	20	7	29	

Table No. 3.

EDEN HOSPITAL, MEDICAL COLLEGE, CALCUTTA.

Placenta Praevia (*1930-1934*).

Year.	Total L.	Total P. P.	Gravida.		Morbid.	Mortal.		Cause of Death.
			Multi.	Primi.		M.	F.	
1930	1,544	21	21	...	5	3	7	Shock ... 1 Sepsis ... 1 Broncho Pneumonia 1
1931	1,712	29	28	1	5	3	7	Shock ... 1 Pulmonary Embolism 1
1932	1,932	19	19	...	4	1	4	Shock - Cæsar Sec... 1
1933	2,070	26	25	1	3	2	7	Shock ... 1 Sepsis ... 1
1934	2,207	22	21	1	3	2	6	Post Partum Hæm. and Shock ... 1 Shock - (Moribund) 1
Total ...	9,465	117	114	3	20	11	31	

Table No. 4.

GOVERNMENT HOSPITAL FOR WOMEN AND CHILDREN, EGMORE, MADRAS.

Placenta Praevia (1930-1934).

Year.	Total L.	Total P. P.	Gravida.		Morbid.	Mortal.		Cause of Death.
			Multi.	Primi.		M.	F.	
1930	3,059	21	19	2	7	3	15	1 Shock. 1 Hæmorrhage. 1 Rupture of uterus.
1931	3,119	24	22	2	4	4	17	3 Hæmorrhage. 1 Shock.
1932	3,174	16	15	1	...	3	11	2 Shock. 1 Hæmorrhage.
1933	3,371	14	11	3	...	0	9	
1934	...	...	...	...	...	...	...	
Total ...	12,723	75	67	8	11	10	52	

Table No. 5.

THE NOWROSJEE WADIA MATERNITY HOSPITAL, BOMBAY.

Placenta Praevia (1931-1934).

Year.	Total L.	Total P. P.	Gravida.		Morbid.	Mortal.		Cause of Death.
			Multi.	Primi.		M.	F.	
1931	4,106	31	26	5	8	2	26	1 Shock. 1 Hæmorrhage.
1932	3,944	24	23	1	4	...	20	
1933	4,302	24	22	2	5	3	20	2 Moribund. 1 Shock.
1934	4,272	43	36	7	7	...	21	
Total ...	16,624	122	107	16	24	5	87	

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SOME ASPECTS OF ACCIDENTAL HAEMORRHAGE WITH AN ANALYSIS OF 212 CASES.

By Dr. R. K. K. Tampan, M.B.B.S., D.G.O. (Mad.).

Haemorrhage in the course of pregnancy is one of the most serious complications of this physiological phenomenon, which the obstetrician is confronted with in his practice, the successful handling of which with the maximum benefit to the mother and the offspring, is a matter of correct diagnosis and energetic treatment. In the early months of pregnancy, the question of the offspring is not of much import and the maternal condition deserves all consideration. In the later months, especially in the last trimester, the desirability of preserving the foetal life with the utmost safety to the mother makes the question more difficult. Very often the haemorrhage occurs during the onset of labour, when the arrest of haemorrhage, promoting of delivery and the avoiding of complications are entirely dependent upon the correct diagnosis and treatment of the causative factor.

In the last trimester of pregnancy, the commonest cause of bleeding is the separation of the placenta, situated either in the zone of contraction or in the zone of dilatation of the uterus, the former being the topic for discussion to-day.

Accidental haemorrhage is certainly a more dangerous condition than placenta praevia in that, in the latter, the general condition of the patient is more or less dependent upon the amount of bleeding she has had as a result of placental separation, whereas in the former, it is almost always associated with other complications of pregnancy such as toxaemia, anaemia etc., and also there is an element of hidden mystery about it, an accident whose magnitude we are not in a position to assess correctly —I mean the concealed variety of haemorrhage whose true colours are evident only after the actual delivery of the child is over, without giving us much of a hint as to its true effect on the mother and child beforehand.

Incidence.—The incidence of this complication of pregnancy is known to vary very much in different institutions, between 1 in 200 to 1 in 500, etc. But in the Government Hospital for Women and Children, Madras, we had 212 cases during the period of six years from 1929 to 1934; during which there were 18,712 confinements, giving an incidence of 1 in 90. The number of cases has steadily increased from 18 in 1929 to 65 in 1934, increase which is very striking indeed, but the reason for this is the increased demand for institutional treatment in cases with the complication firstly due to spread of public

opinion and secondly due to the propaganda by the authorities of the Child Welfare Scheme who advise such cases to seek admission to the hospital at an early stage. In this group, 34 cases occurred in primiparae, who number 5,040 during the period under review, giving an incidence of 1 in 150 nearly. The rest occurred in other paras from 2 to 14, the majority of cases occurring in III, IV, V, VI, VII and VIII, who claim about two-thirds of the cases. Among the 212, 30 cases were concealed, 82 cases revealed and 100 of the combined variety. There is no particular relation that could be drawn up between parity and variety of haemorrhage; they occur in almost the same proportion of cases in the primis as well as in others. The association of albuminuria and other toxaemic manifestations are more in the concealed variety than in the others. Out of 30 cases of concealed haemorrhage, albuminuria was present in 15 with other toxaemic manifestations such as oedema, anaemia, etc., in nine of them. Among the 82 cases of the revealed variety, albuminuria was present only in 17, with toxaemic manifestation in 7, whereas in the combined group of 100, 36 showed albuminuria with other toxaemic symptoms in 25.

With referance to the period of pregnancy, 80 cases occurred near term or during onset of labour, the rest occurring at varying periods of gestation between 36 and 24 weeks the maximum incidence being between 36 and 28 weeks which account for nearly two-thirds of the cases. In studying the variety of haemorrhage with reference to period of pregnancy, it is noted that the concealed and the revealed varieties occur mostly near term or during onset of labour, whereas the combined variety occurs mostly during the earlier period between 28 and 36 weeks.

Symptoms.—Bleeding is the most important symptom of this condition, very often it is associated with pain which is more or less of colicky nature, referred to the uterus, occasionally to the small of the back. The amount of external bleeding depends upon the variety of haemorrhage, whether concealed, mixed or revealed and also upon the amount of separation of the placenta, a factor which cannot be determined accurately. A tense and tender uterus with a history of sudden onset of pain and a rise in pulse rate is more or less pathognomonic of concealed variety of accidental haemorrhage. Symptoms of shock of a variable degree are also found especially in concealed type. Among this group of 212 cases, the condition of the uterus was found to be tense and tender in 29 cases which according to the variety of haemorrhage falls into, concealed 10, revealed 3 and combined 1 ; giving an association of this sign with the variety of haemorrhage: 1 in 3 in concealed, 1 in 6 combined, and 1 in 25 revealed.

The general condition of the patient depends upon whether the bleeding is mild in character or severe. In the mild cases, there may

be no marked alteration in the general condition, the bleeding generally occurring with the onset of labour, the delivery taking place fairly quickly, a few retroplacental clots being passed with the placenta. The extreme cases are those where a more or less complete separation of the placenta occurs and the blood either comes out per vaginum or is hidden between the placenta and the uterine wall, behind the presenting part or finds its way into the amniotic cavity. Between the mild and extremely severe cases we get all grades of condition. A very severe condition is one where the blood extravasates into the musculature of the uterus making it thoroughly inert and unfit to complete delivery. But this peculiar condition is rare and of these 212 cases, only one case has been definitely noted to be of this type, though lack of facilities prevented postmortem examination in other cases where they ended fatally before delivery had occurred. A symptom of highest importance from the diagnostic and prognostic point of view is the exudation of serum per vaginum, with a few small dark flakes of clots indicating continued haemorrhage in utero forming a retroplacental clot and depleting the system of the albuminous part of the blood. Abdominal palpation and auscultation with vaginal examination to exclude the presence of the placenta in the lower uterine segment always give enough information to recognise the condition.

Aetiological factors.—Various factors such as mechanical injury, endometritis, chronic nephritis, toxæmia, multiple pregnancy, hydramnios, diseased condition of the uterine muscle, etc., are all considered as predisposing causes of this condition. In the group under review, history of injury is obtainable only in 3 cases, hydramnios in 2 cases, multiple pregnancy in 7 cases.

Albuminuria was noted in 68 cases, out of these, and of those other symptoms of toxaemia other than albuminuria such as oedema, etc., was noted in 38 cases. Also there were 3 cases of oedema without albuminuria. The toxaemia cases were distributed among the varieties of haemorrhage as 9 in concealed, 8 in revealed and 24 in the combined group. Among the albuminuria group, there were 17 cases of revealed, 15 cases of concealed and 36 cases of combined.

No cases of separation of the placenta during operative procedures like internal podalic version or external podalic version or breech extraction, are noted.

From a study of these cases, a striking factor of some significance is the history of previous pathological pregnancy terminating in abortion, premature labour or still birth or the association of conditions like eclampsia or antepartum haemorrhage in a previous pregnancy. How this condition affects the present pregnancy and brings about this

complication is a matter which requires further study but I may suggest that the presence of occult nephritis in a previous pregnancy which brought about a premature labour or miscarriage in that pregnancy or an endometritis as a result of previous pathological labour with sepsis and subinvolution, are two of the important lines of investigation, which may lead us to some preventive measures in this line. 51 cases out of 212 gave a vicious obstetric history and among these 4 had previous eclampsia and 2 antepatum haemorrhage, and among these 51, 16 developed toxaemic symptoms before the onset of bleeding during the present pregnancy. These 16 cases of toxaemia terminating in accidental haemorrhage clearly show that pre-eclampsia may terminate either in the convulsive type of toxaemia, *viz.*, eclampsia, or in the haemorrhagic type of toxaemia, *viz.*, accidental haemorrhage. It is also interesting to note that in these cases of pre-eclamptic toxaemia, except in 1 case, blood pressure was always at or about 100—110, as against higher figures in other cases which ended in eclampsia, and it is only reasonable to suggest that these cases of pre-eclampsia which have only a low blood pressure, usually end in accidental haemorrhage, whereas the others with high blood pressure, end in eclampsia.

A large number of cases do not offer any readily discernible etiological factor but the fact that we draw our material from patients of the poorer class who have to work hard even though they are advanced in pregnancy, may suggest if there are not any minor traumatic causes like straining, carrying heavy weight, lifting children, etc., a factor which may start on a mild separation of placenta.

Treatment.—The aims of treatment in these cases of accidental haemorrhage are mainly to control the haemorrhage, promote uterine contractions, expedite delivery, avoid complications or treat them promptly if they arise and conserve the strength of the patient. The life of the foetus is mostly of secondary importance, as in most of these cases, the foetus is premature, dead or macerated, but if the foetus is full term and alive, the life of the foetus has also to be reckoned with in the treatment, but an association of a full term live child with severe type of haemorrhage requiring treatment is very rare.

The method of treatment to be adopted in a particular case depends upon the term of pregnancy, the condition of the mother and child, the condition of the uterus and cervical os, the amount and type of haemorrhage, the facilities available for the treatment of the case and the personal factor in assessing the condition and taking the best course under the circumstances. Generalisations are not possible as to

the mode of treatment, each case having to be treated on its own merits. The methods of treatment adopted in this group are :—

(1) Watchful expectancy with readiness to interfere at a moment's notice.

(2) Rupture of the membranes.

(3) Rupture of the membranes with douches, binder, draughts, etc.

(4) Rupture of the membranes, with pituitrin injection.

(5) Rupture of the membranes and plugging with or without pituitrin.

(6) Willett's Forceps.

(7) Operative delivery by forceps, version or breech extraction when conditions are satisfactory.

(8) Caesarean section with or without hysterectomy.

Spontaneous delivery is possible in a large number of the cases with the methods detailed above, or the delivery may be completed with forceps, etc., after the cases have been treated on the conservative lines for some time. The conservative line of treatment is most suitable in all cases except those where there is reason to believe that the uterus is severely damaged and inert, or where the foetus is full term and alive, patient is bleeding profusely internally with a rigid and non-dilatable cervix when Caesarean section with or without hysterectomy is the best procedure, provided the patient can stand the operation without risk.

It is interesting to note that out of this group of 212 cases, the delivery was effected in the three groups in the following manner :—

I. *Concealed variety* (*30 cases*).

Spontaneous delivery			...	21
(Watchful expectancy	...	10		
Rupture of membs.	...	7		
„ and douches	...	3		
„ and pituitrin	...	1		
		21)		
Forceps			...	6
Perforation			...	1
Caesarean hysterectomy			...	1
Willett's Forceps			...	1

II. *Revealed variety* (*82 cases*).

Spontaneous delivery		... 63
(Watchful expectancy ...	23	
Rupture of membs. ...	20	
„ and douches &c. ...	9	
„ and pituitrin ...	5	
„ and plugging ...	6	
	63)	
Forceps		... 10
Breech extraction		... 3
Internal podalic version		... 2
Died undelivered		... 4

III. *Combined variety* (*100 cases*).

Spontaneous delivery		... 83
(Watchful expectancy ...	27	
Rupture of membs. ...	14	
„ and douches &c. ...	18	
„ and pituitrin ...	15	
„ and plugging ...	9	
	83)	
Forceps		... 10
Willett's forceps		... 1
Perforation		... 1
Breech extraction		... 4
Died undelivered		... 1

Taking all these cases together :—

Spontaneous delivery ...	167 cases	= 79%
Operative delivery, such as forceps, version, perforation etc. ...	40 „	= 19%
Died undelivered ...	5 „	= 2%

Of these cases of spontaneous delivery :

Watchful expectancy ...	60
Rupture of membranes ...	41
„ and douches etc. ...	30
„ and pituitrin ...	21
„ and plugging combined with pituitrin. ...	15

Caesarean hysterectomy was done in a case of concealed accidental hæmorrhage in a primi with a rigid cervix, full term, child dead, transverse presentation; the uterus on opening up, was found to be septate The above analysis shows that in most of the cases, a successful termination of the case is obtained by simpler methods of treatment and such radical courses as Caesarean section as soon as a case is diagnosed as accidental hæmorrhage are seldom necessary. But of 5 cases which died undelivered, 4 were of the revealed variety who had been admitted in a collapsed condition who were treated only with restoratives, operative interference of any sort being found unwarranted. One case was combined variety admitted moribund. In this group of cases, patients had to be treated with restoratives such as glucose and brandy, injections of saline, digalen etc. in 34 cases. Postpartum haemorrhage was a complication in 18 cases, of which 13 were treated successfully, 5 of them dying of this complication. Postpartum haemorrhage was noted in 4 cases of concealed, 8 cases of revealed and 6 cases of combined. Out of these, 9 were operative and 9 spontaneous deliveries.

Maternal mortality.—There were 19 maternal deaths in this group of 212 cases, 5 of which died undelivered, having been admitted more or less moribund and no treatment more than restoratives being adopted thus giving a gross mortality of 8 95 per cent and a corrected mortality of 6·60 per cent excluding those admitted moribund. Out of the rest which were delivered in hospital, 4 were in the concealed variety, 3 of which died within 4 hours after delivery, 2 being operative and one spontaneous. The 4th one died of sepsis on the 7th day after spontaneous delivery. 1 case of revealed haemorrhage died on the 2nd day after forceps due to septic complication. Of the 9 remaining cases of the combined variety, 4 died within a few hours after delivery, 3 by forceps and 1 spontaneous. The 5 other cases died of sepsis within the first 8 days, 4 of the deliveries being spontaneous and the other, breech extraction.

In the whole group, 5 died of postpartum haemorrhage, 2 shock and 7 of septic and other complications developing after delivery. Most of the deaths occurred in cases who were fifth para and above.

In these cases which died, 3 cases had toxaemic manifestations, 7 cases were noted with tense and tender uterus, a condition which has certainly an effect on the subsequent course of the uterus after delivery in giving rise to Postpartum haemorrhage or developing uterine sepsis.

The maternal mortality in spontaneous delivery cases, numbering 7, was due to shock in 1, postpartum haemorrhage in 1, and sepsis in 5 whereas in operative delivery cases 7, the death was due to shock in 2, postpartum haemorrhage in 3 cases and sepsis in 2.

Maternal morbidity.—Besides the 14 cases which died after delivery and the 5 which died before delivery, there were 33 cases where the puerperium was morbid due to one or other causes. Of these, 8 cases only were operative deliveries, 1 Caesarean hysterectomy. 4 forceps, 2 breech extractions and 1 Willett's forceps application, They all developed uterine sepsis. The other 25 cases of spontaneous delivery developed uterine sepsis in 16 cases and other complications such as pneumonia, influenza, dysentery etc. in the other 9 cases. Of the 24 cases, which developed sepsis after operative or spontaneous delivery, the general condition of the patient was found to be below par in 18, anaemia, albuminuria, oedema and such other conditions being present in all of them. The prevalence of sepsis in these and other cases also are attributable to the fact that these cases before coming in to the hospital have had a few internal examinations at least before they came in.

Out of these 33 cases, 3 were in concealed, 6 in revealed and 24 in combined variety, showing thereby that the last one has a particular predilection for this complication *viz.*, in about 25 per cent of cases.

Fœtal mortality.—A study of foetal mortality in this complication goes to show that it is something very appalling, much more than what we get in any other complication. In this group, there were 23 still births, 5 macerated foetuses, 1 neonatal death and 1 child alive out of 30 cases of concealed accidental haemorrhage, where it is definitely found to be nearly a 100 per cent cause of foetal mortality.

Out of 78 cases of revealed variety which delivered, 29 children were alive, 33 were stillborn, 14 were neonatal deaths and 2 macerated foetus, showing thereby that there is the greatest chance for the foetus in this group of cases.

Between these two is the result of the combined variety where, out of 99 cases delivered, 59 were still born, 20 children were alive, 10 neonatal deaths and 10 macerated foetus.

Taking the whole series into consideration, we find out of 207 deliveries, there were 50 live children, the rest of them, viz., 157 babies, being dead at birth or dying within the first week of life. This appalling death rate is attributable to the association of this condition with the onset of premature labour, presence of toxæmic conditions and stoppage of nutrition of the foetus due to early separation of the placenta. The foetal mortality is also increased because in this condition, not much consideration is given to the foetus as the more predominant condition is that of the mother.

Summary and conclusions.

1. Incidence of this condition is irrespective of parity or period of pregnancy.

2. Association of accidental haemorrhage with toxaemic manifestations was found in 21% of cases, the association being more marked in concealed and combined varieties.

3. Etiological factors include also the pernicious effect of a previous pathological pregnancy or labour, a large percentage of them developing toxaemic symptoms in this pregnancy terminating in haemorrhage.

4. Haemorrhage in toxaemic conditions is noticed mostly in cases where the blood pressure is low.

5. Tense and tender condition of the uterus is a sign of great prognostic importance.

6. Spontaneous delivery with the help of simple methods of conservative line of treatment are successful in a great majority of cases. Radical measures are rarely necessary.

7. Maternal mortality is dependent on the type of haemorrhage most in concealed, rare in revealed, and rarest in combined, unless the patient comes under treatment when *in extremis*.

8. In most of the cases, deaths from sepsis are cases of spontaneous delivery and deaths from post partum haemorrhage are in operative ones.

9. Morbidity is governed to a large extent by the variety of haemorrhage, morbidity being highest in combined where the uterus is damaged besides the system being exsanguinated to great extent.

10. Foetal mortality is very great in this condition, being nearly 100 per cent in concealed, 20 per cent in revealed and 37·2 per cent in combined, total in the series being nearly 76 per cent including both stillbirths and neonatal deaths.

To sum up, accidental haemorrhage is one of the most serious accidents to a pregnant woman asked in by conditions of her health in the past and present pregnancy, an accident which, unless diagnosed and treated promptly, causes loss of life to a few and prolonged convalescence and delay in recovery to many more and almost certain death to the foetus in utero, which even if born alive, may yet be sacrificed in the first week of its terrestrial existence.

FUNCTIONAL UTERINE HAEMORRHAGE

(A clinical study of 522 cases admitted in the Cama Hospital during the years 1929-1934.)

BY DR. DADHABAI (*Bombay*).

I have ventured to bring this subject before you with a view to elicit opinion of my learned colleagues, who have assembled here to-day. I crave your indulgence for any short comings that you may notice in this paper, particularly as the subject is rather new and of a controversial nature. It is my own personal attempt to study the subject from clinical point of view without any adequate laboratory investigations.

In 1932, I read a paper on " Uterine Haemorrhages " at the Semi Jubilee Conference of the Association of Medical Women in India held in Bombay.

In 1934 I brought up a paper on " Endocrinology in relation to Obstetrics and Gynaecology," before the Obstetric Section of the 10th All-India Medical Conference, also held in Bombay.

The present paper is the outcome of these previous studies following on the investigation of 200 cases of Functional Uterine Bleeding by Wilfred Shaw, published in the Obstetric and Gynaecological Journal of the British Empire in 1929.

In a child bearing period of life, women menstruate regularly from puberty to menopause except during pregnancy and lactation.

Majority of our gynaecological patients seek medical advice for irregular vaginal haemorrhage. In many cases the cause of this abnormal bleeding can be assigned to some gross pathological changes, such as uterine tumours—malignant or non-malignant, etc. In a large number of cases no gross physical abnormality can be detected and no satisfactory anatomical cause can be discovered. These latter cases are frequently labelled as menorrhagia and metrorrhagia according to the type of irregularity, though not offering any explanation of the cause of abnormal bleeding, or they are referred as cases of endometritis and chronic metritis, although there is no true inflammatory condition present in the uterus.

In 1907 Hitschmann and Adler have shown that the Endometritis described has no pathological significance. It is merely a histological

appearance of physiological cyclical changes in the endometrium during menstruation.

Later Schroeder investigated into the relationship between ovarian and uterine cyclic changes and came to the conclusion that the disorders of menstrual function may be determined by disturbances of ovarian function. He labelled these cases as metropathias.

With respect to chronic metritis Fletcher Shaw proved that there is no evidence of chronic inflammatory changes in the myometrium.

Mathew Duncan associated endometritis with cases of haemorrhage following abortion, puerperal sepsis, infective fever, infection due to sloughing tumours and pyometra at menopause.

True endometritis is interstitial. The glandular changes are due to ovarian disturbances. Presence of plasma cells are diagnostic of ture inflammatory condition and these cells are absent in menstruating endometrium.

Physiology of Menstruation.

Menstruation is divided into 5 phases.

Reckoning from the last day of menstrual bleeding there is a period of rest followed by regeneration of the endometrium, side by side with the maturation of the follicle in the ovary. On the 14th day, *i.e.*, counting from the 1st day of the bleeding, the follicle ruptures extruding the ovum and with it the liquor folliculi and the consequent formation of Corpus luteum.

This liberation of liquor folliculi causes hyperplasia of the glands and stroma of the endometrium. When the corpus luteum is formed, it causes proliferation of the glandular epithelium with secretion of mucus in the cells and hyperplasia and hypertrophy of the stroma cells. This is called the premenstrual or secretory phase of the menstruation. On the 28th day if the ovum fails to get itself embedded in the endometrium, the corpus luteum begins to degenerate, leading to bleeding from the uterine cavity, *i.e.*, menstruation.

Wilfred Shaw investigated into 200 cases of irregular uterine bleeding. He compared the histological findings with the clinical aspect of the cases. He explains the cause of the irregular bleeding on the basis of Schroeder's modern work on the correlation of ovarian and uterine cyclic changes.

He groups his cases on clinical symptoms. In his 200 cases there were no physical signs to explain the cause of bleeding. Endometrium was examined in every case, myometrium and ovaries were examined whenever possible, the reason being that hysterectomy was rarely performed as majority of these cases yielded to radiological treatment after curetting.

A careful record was taken of menstrual history in each case. He classifies his cases as follows :—

1. Metropathia haemorrhagica.
2. Epimenorrhoea and Epimenorrhagia.
3. Hypomenorrhoea.
4. Metrorrhagia.
5. Endometritis.
6. Cases that could not be classified.

Metropathia : 26·5 per cent

Age 40—50 occasionally under 30.

History: Bleeding commenced with the period or followed a period of amenorrhoea.

50 per cent of cases gave history of amenorrhoea.

It followed normal periods or sometimes prolonged periods.

Uterus is normal or slightly enlarged.

Ovaries are cystic.

Endometrium—polypoid.

Glands are dilated and cystic.

There is hyperplasia of the glands and the stroma.

Epimenorrhoea : 36 per cent. Most common of all varieties. All ages are affected, generally between 40—50. The menstrual cycle is short and flow is greater and prolonged Most of the patients have borne children.

Uterus : symmetrically enlarged.

Ovaries—small, corrugated, atrophied, and contain hoemorrhagic cystic follicle. There are too many corpora lutea found in these cases.

Endometrium: is thicker than normal but may be scanty.

Surface epithelium is normal.

Glands are normal.

Stroma—oedematous, hyperaemic (the cause of excessive bleeding.)

Hypomenorrhoea: 8 per cent.

Age 40—50. Occasionally young.

Menstrual cycle is increased to 35 to 42 days.

There is increase in blood loss and increase in the length of the flow.

Uterus is normal or slightly enlarged. It may be associated with fibroid.

Ovaries are hyperaemic with follicular haematoma.

Endometrium is normal.

Metrorrhagia: 5 per cent.

Average age 30 to 40 years.

Periods are normal but there is inter menstrual show of true blood or of pinkish colour.

Uterus is normal.

Ovaries are enlarged hyperaemic. There is true hyperplasia and hypertrophy suggesting hyper-activity.

Endometrium shows enormous hyperaemia, though the cyclical changes are normal.

Endometritis: 6 per cent.

True inflammatory lesions are scattered in the superficial and middle layers of the endometrium.

Unclassified: 17 per cent

Out of 522 cases collected by me, only 98 showed gross lesion as Fibroid Uterus and Carcinoma Cervix and these are excluded from the present study. The remaining 424 showed no abnormal physical signs and are classed as cases of Benign or Functional Uterine Bleeding.

Following Wilfred Shaw's classification, they were :—

Metropathia—33 per cent.

Age—Majority were under 40, *i.e.* between 20 and 40 years.

History of amenorrhoea 33 per cent.

Uterus was normal, ovaries cystic, endometrium was polypoid.

Majority of cases were women who had borne children.

Epimenorrhoea—only 11 per cent.

Age 20 to 40 years.

Uterus normal, ovaries small, endometrium thick

Hypomenorrhoea—9 per cent.

Age 20 to 40 years.

Uterus, ovaries, endometrium are normal.

Metrorrhagia—14 per cent.

Age 30 to 40 years.

Endometritis—11 per cent.

Unclassified—13 per cent.

Comments and Conclusions.

I. Camparing the percentages of varieties in each case, one notices that the percentage of cases of Epimenorrhoea is lower and that of Metrorrhagia is higher in my cases.

This difference may be accounted for by the reason that no particular attention was paid to the character of bleeding whilst taking down the history from the patients.

II. The average age of my patients is between 20 and 40 years, *i e.*, the patients in my series are younger than those investigated by Willfred Shaw.

Even taking for granted that the age given by our Indian patients is not correct, one cannot help thinking that this difference may be due to three reasons, *viz.*, that in the tropics puberty occurs at any early age, the age incidence of marriage is lower, and that menopause also occurs at an earlier age.

III. *Caste.* Out of these 500 cases, about 209 were Hindus, 115 Parsees, 109 Mahomedans, 67 Christians and only 17 were Jews.

These numbers correspond to the number of each community taking advantage of the institution as a whole, except the Parsees who gain admission in proportionately larger number with the specific idea of taking Radium Treatment.

IV. Parity is another particular feature in our patients, *i.e.*, majority of them have borne children and mothers of many children, thus there are 327 multiparas, 163 sterile and only 34 are single.

Treatment.

We all know that the treatment of these cases still remains unsatisfactory. Some cases improve with medicinal treatment, others by treatment with endocrines. Curetting does help in some cases, but majority return with recurrence of bleeding. Great many of these patients are under 40 years, and one does not think of treating them with Radium for fear of producing premature menopause. Those near the menopausal age are permanently cured by curetting followed with Radium.

In patients who are rendered anaemic, Blood Transfusions help.

In younger patients, small doses of Radium or X-ray have been recommended and X ray to spleen, thyroid and pituitary with varying results.

The latest treatment in vogue is the injection of urine of early pregnant women, to obtain large doses of anterior pituitary hormone. I have not been able to try it on account of the difficulty in getting suitable donors.

In the American Journal of Obsterics and Gynaecology—August 1935, Mazer and Spitz recommend low dosage irradiation to ovary, pituitary. I have just begun to treat my patients on this line and hope to report the results later

In concluding my paper, I have to express my best thanks to my colleague, Dr. Jhirad for allowing me to include her cases in my report and also to Miss Heredia, our house surgeon, for collecting the notes of these cases from the hospital records.

THE POSITIVE 5-YEAR CURE CASES OF CARCINOMA CERVIX-UTERI IN INDIA.

SUBODH MITRA, M.D. (BERLIN), M.B. (CAL), F.R.C S. (EDIN.), M C.O.G. (LOND).

It is a little over an age that I have been studying Uterine Cancer cases, first 3 years in Germany and the rest of the time. in India. The most tedious part of the job is to follow up cases. You seldom get the response and never any appreciation. My following-up result in Germany was not bad although I had to move from pillar to post to get at the cases. Most of the patients change their residence, and it is the custom in Germany to notify the police and the municipal office of the district or ward you leave as well as of the one you shift to. Thus there is very little chance of losing sight of a case.

Unfortunately the situation is quite different in India. The economic condition of our people rendering abouthalf the patients houseless, inefficient civic organisation, neutral attitude of the Government so far as the notification of change of address is concerned and lastly want of responsibility on the part of our patients, make the question of following-up extremely difficult. I always try to take three addresses of each patient besides that of the attending doctor if any. Of the three addresses, one is of the patient herself, the second one is of her relatives and the third one of one of her neighbours. I issue letters periodically to different addresses but unfortunately the response is meagre. For the following-up record of my Cancer cases, I have considered those cases which could not be traced as dead, although we do get one or two cases unexpectedly later on, to improve 5-year statistical results, as for example, I got one of my cases of 1926 about a fortnight ago whom not being able to trace I considered dead.

My plea for taking up only the positive cases is that I like to present before you some facts and figures that Cancer cases are curable and can pass through the conventional 5-year cure period in India. I have already shown you the difficulties of following-up. I like to point out another difficulty:—about a third of the cases that come for treatment do not complete the treatment. So we get the benefit of administering full course of treatment to only the remaining two-thirds.

Assorting our cases for the last 10 years which would be about 700, we find that scarcely 10 per cent come to the early group. In my previous communication in the III International Radiological Congress in Paris I divided my cases as early, late and terminal ones, but since then I have been following International Gradation of Carcinoma

Cervix-Uteri as propounded by the Cancer Commission of the League of Nations. Stages according to Anatomical extent of growth are:—

Stage 1. The growth is strictly limited to the Cervix-uteri. Uterus mobile.

Stage 2. Lesion spreading into one or more fornices with or without infiltration of the parametrium adjacent to the Uterus, the Uterus retaining some degree of mobility.

Stage 3. (*a*) Nodular infiltration of the parametrium on one or both sides extending to the wall of the pelvis, with limited mobility of uterus or massive infiltration of one parametrium with fixation of the uterus.

(*b*) More or less superficial infiltration of a large part of vagina with a mobile uterus.

(*c*) Isolated metastases in the pelvic glands with a relatively small primary growth.

(*d*) Isolated metastases in the lower part of vagina.

Generally all cases not falling into stages of 2 and 4 will be placed under 3.

Stage 4. (*a*) Cases with a massive infiltration of both parametria extending to walls of Pelvis.

(*b*) Carcinoma involving the bladder or rectum.

(*c*) The whole vagina infiltrated (rigid vaginal passage) or one vaginal wall infiltration along its whole length with fixation of primary growth.

(*d*) Remote metastases.

Cases of stage 1 are very rarely met with. Most often they are detected accidentally when the patients present themselves for examination for other ailments. I have got only 11 cases of stage 1 out of 352 cases during the years between 1926 and 1930. Stage 4 cases are what were formally described by me as terminal cases, where one cannot do anything. They are treated only as a palliative. They never take the full course of treatment, nor the surgeons are very enthusiastic about them.

Histologically, we have followed Schottlaender and Kermauner's classification of ripe, unripe and midripe types. We have made section

only from those cases, which were found suspicious. For definite clear cut cases, no biopsy was done.

Morphologically, my cases have been divided into :—

(*a*) Proliferative type (30 per cent of our series).
(*b*) Ulcerative „ (34 „ „).
(*c*) Fungative „ (20 „ „).
(*d*) Hard indurative type (16 per cent of our series).

Regarding regional infiltration of parametria and lymph nodes, Wertheim has shown that in 22·5 per cent of cases parametria remain quite soft inspite of their being infilterated by cancer cells: this is an important point so far as the management of Ca-cervix cases are concerned; it is not only the local growth which is to be treated but also the parametrial tissue as well no matter whether the latter was infiltrated or not. In our series, 60 per cent of cases have got infiltration in both parametria, and base of bladder involved in 37 per cent of cases. We have noticed that left parametrium is more frequently infiltrated than the right (76 per cent of cases)—it might be due to preponderance of left lateral cervical tear—a very common incident during confinement.

The whole secret of success in cancer treatment depends upon finding out early cases and giving full course of rational treatment. Once the Cancer cells pass beyond parametrial regions, the prognosis becomes 100 per cent worse. It is then the moral duty of every medical man to find out early Cancer cases of the 1st and 2nd grade. It cannot be too greatly emphasised that every woman after 35 giving the history of irregular bleeding or persistent white discharge should be thoroughly examined and be given the benefit of doubt.

The positive 5-year cure results which I now present before you consist of cases being treated during 1926 to 1930. These cases have been treated entirely with Radium and Deep X-Rays and almost on similar principles as those followed in Prof. Rigaud's Clinic in Paris, Prof. Doderlein's Clinic in Munich (German) and in Prof. Forsell-Heyman's Clinic in Stockholm. The skeleton of treatment is that on an average we give 6000 m.g.h R. E. partly in the vagina and partly in the Cervical Canal. This is supplemented by intensive course of Deep X-Ray therapy. Since 1932 we have changed our technique.

It has been definitely shown by Prof. Doderlein that Cancer cells still persist after intensive Radiation treatment. That is why much better result is expected by operation and radiation than by simple radiation. Moreover by removing the uterus with as much parametrial tissue as possible, Radium can have better access to more distant tissues. With this incentive, I have started the new technique

of operation and radiation and in course of another 2 years, I shall be able to produce before you my comparative statistics, although the statistical results given by late Prof. Franz of Berlin and Prof. Adler of Vienna show a much higher per cent of 5 year-cure by this particular combined method of treatment than by any other method. For operation—vaginal route is followed by giving deep para-vaginal Schauta-Schuckert incisions. The whole secret lies in free dissection of parametria and removal of as much of parametrial tissues which is made possible only by deep para-vaginal incisions and free dissection of Ureters. In support or my new technique, it will not be out of place here to mention about a case of mine—where the growth was just in the transitional stage between the 2nd and 3rd grade In this case, operation was tried, by a member of our profession but given up finding the uterus fixed. I gave her a full course of Radium and Deep X-Ray treatment. The growth disappeared .and the patient felt quite alright. Before leaving Calcutta, the patient came to me for examination and although apparently there was no ulcerative growth in the cervix, it gave me a suspicious feel. Operation was advised. The uterus with part of the parametria was removed by the Schauta-Schuckert vaginal route which I always follow in Cancer Cervix cases. The microscopical section revealed typical cancerous growth. Now this is a case clearly illustrating Doderlein's findings. The patient had full dose of Radium and X-Rays which are supposed to kill all the Cancer cells and it was too early to have any recurrence of growth. I am now more than convinced that early cases should be operated as is now the practice in Germany and Vienna.

The table I shows that I have got 40 cases to my credit. These cases have been divided year by year and according to International gradations.

In 1926.	1 case in 1st grade.	3 in 2nd grade.	1 in 3rd grade.
In 1927.	3 cases in 1st grade.	4 in 2nd grade.	4 in 3rd grade.
In 1928.	1 case in 1st grade.	2 in 2nd grade.	5 in 3rd grade.
In 1929.	2 cases in 1st grade.	3 in 2nd grade.	2 in 3rd grade.
In 1930.	1 case in 1st grade.	2 in 2nd grade.	6 in 3rd grade.

I must confess that I feel proud of these 40 cases which have passed through the conventional 5 year-cure period. But my heart really aches when I find my absolutely helpless position in dealing with the remaining hundreds of cases. It is an unbearable sight to find those helpless advanced Carcinoma cases writhing with agonising pain and there is no remedy for it. Thus again comes the question of early detection of cases by every possible means. We want our medical Institutions to take up the initiative; every student should be alive to the question of early detection of cancer, every medical practitioner

should know that these cancer cases are quite frequent, a little careful examination keeping in the corner of mind the possibility of finding early cancer cases will reveal many such cases. Early cases are encountered first by the general practitioners, and if we really want to increase the percentage of early cases from 10 per cent to 100 per cent, we shall have to get the sincere help and co-operation of our fellow brothers. The benevolent, social organisations should enlighten the lay public by way of popular lectures, lantern slides and leaflets as they are doing in America and Europe; there is no harm giving the benefit of doubt in a doubtful case; even a little cancer-phobia will not kill a person, but a cancer case neglected and undetected will lead to sure death. Lastly the work of cancer investigation cannot be complete unless substantial help and co-operation come from the Corporation and the State.

Although I have given positive picture of my successful cases, and talked about the essential need for medical and non-medical organisation for "Fight against Cancer", my work will not be complete unless I present before you the result of following-up of all my cases as tabulated in the following tables.

Table II shows the total number of cases admitted, total number of cases taking full course of treatment and the survival periods which I have traced upto 9 years. This table shows that taking cases in all stages together, we get a survival period of 5 years in 20 5 per cent cases, and when we add to the number those cases which took only a part of the treatment, the percentage comes down to 11·1 per cent. Tables III, IV and V show survival period cases in different stages of cancer.

Table No. I.

POSITIVE 5-YEAR CURE CASES OF CARCINOMA CERVIX-UTERI.

Year.	Stage I.	Stage II.	Stage III.	Stage IV.	Total.	Grand Total.
1926	1	3	1	...	5	40
1927	3	4	4	...	11	
1928	1	2	5	...	8	
1929	2	3	2	...	7	
1930	1	2	6	...	9	

Table No. II.

CARCINOMA CERVIX-UTERI.

Year.	No. of cases admitted.	No. of cases taking full course of treatment.	Alive at the end of years.										Lost sight of.
			½	1	2	3	4	5	6	7	8	9	
1926	23	15	15	14	10	9	7	5	5	4	3	3	...
1927	62	34	25	25	22	18	13	11	11	9	8	...	9
1928	101	53	37	31	21	13	13	8	5	3	...	...	14
1929	95	48	42	35	22	15	12	7	5	...	...	...	6
1930	71	46	29	26	19	13	10	9	...	...	...	...	17

Table No. III.

CARCINOMA CERVIX-UTERI.

Stage I.

Year.	No. of cases admitted.	No. of cases taking full course of treatment.	Alive at the end of years.										Lost sight of.
			½	1	2	3	4	5	6	7	8	9	
1926	2	2	2	2	2	2	2	1	1	1	...	...	...
1927	3	3	3	3	3	3	3	3	3	2	2	...	...
1928	1	1	1	1	1	1	1	1	1	...	...	...	...
1929	4	2	2	2	2	2	2	2	1	...	...	...	...
1930	1	1	1	1	1	1	1	1	...	...	...	...	...

Table No. IV.

CARCINOMA CERVIX-UTERI.

Stage II.

Year.	No. of cases admitted.	No. of cases taking full course of treatment.	Alive at the end of years.										Lost sight of.
			½	1	2	3	4	5	6	7	8	9	
1926	4	4	4	4	4	4	3	3	3	2	2	2	...
1927	5	5	5	5	5	4	4	4	4	4	4	...	...
1928	6	5	3	3	3	2	2	2	1	1	...	...	2
1929	11	9	7	7	7	6	3	3	3	...	...	...	2
1930	8	8	2	2	2	2	2	2	...	...	...	...	6

Table No. V.

CARCINOMA CERVIX-UTERI.

Stage III.

Year.	No. of cases admitted.	No. of cases taking full course of treatment.	Alive at the end of years.										Lost sight of.
			½	1	2	3	4	5	6	7	8	9	
1926	11	9	9	8	4	3	2	1	1	1	1	1	...
1927	49	26	17	17	14	11	6	4	4	3	2	...	9
1928	89	47	33	27	17	10	10	5	3	2	...	...	14
1929	74	37	33	26	13	7	4	2	1	...	...	...	4
1930	52	37	24	23	16	10	7	6	...	...	...	...	11

Stage IV.

1926 ... 6
1927 ... 5
1928 ... 5
1929 ... 6
1950 ... 10

Did not get full course of treatment. Radium applied only as palliative.

Results. — *5-Year Cure.*

I. *All Stages together.*
Absolute ... 11·1%
Relative ... 20·5%

II. *I and II Stages.*
Absolute ... 48·8%
Relative ... 55·0%

STERILITY DUE TO TUBAL OCCLUSION.

Diagnosis and Operative Treatment.

By V. B. Green-Armytage, M.D., F.R.C.P., F.C.O.G.
(*Gynæcological Surgeon, West London Hospital.*)
Late of the Indian Medical Service.

The attitude of gynæcologists to the subject of tubal occlusion has hitherto been one of pessimism, for whatever operation has been performed, whether it be slitting up the tubes or making a spoon shaped trumpet end, the result, however meticulous the care from the point of view of patency, has subsequently been negative.

Indeed if a salpingogram is taken or an insufflation test done, six to eight weeks after operation the lumen of the tubes will be found to have again become occluded, in a large majority of the cases. To test this, ten patients were chosen in whom, though the tubes were impalpable, no air or lipoidal was found to pass.

At the time of laparotomy it was found possible after opening the fimbriated ends to milk silk worm gut or a very fine probe through the tubes into the endometrial cavity In several, this was only feasible after separating adhesions and unlocking morbid convolutions.

In some the use of an insufflator which had been previously affixed to the cervix showed that the tubes were patent. In others, instead of using an insufflator, the cervix was grasped with a Bonney myomectomy clamp, and a needle attached to a 10 c.c. Record syringe charged with air was plunged into the endometrial cavity through the top of the fundus, half way between the cornua.

If patency has been established, a positive test is very prettily demonstrated by erection of the tubes and the appearance of bubbles at the external ostia.

Being satisfied that no oozing is present at the site of operation the abdomen is closed.

On discharge the patients were requested to return for a further insufflation in three to six weeks time, that is, one week after the first or second menstrual period.

In all, including three doubtful ones, in whom I did a salpingogram, the test much to my disappointment was negative, the considered explanation being that that portion of the morbid tube which is two-thirds of an inch long and is an integral part of the body of the uterus, had again become impervious.

In order to obtain more exact information in a second series, it was decided to take lipiodalograms before operation when there was reason to suppose from the history and physical signs that the tubes were at fault.

In this series it was demostrated that the lipoidal failed to penetrate the interstitial portion of the tubes, although at the time of subsequent operation it was quite possible with some teasing to pass a fine probe from the fimbriated ends along the tubes as far as the cornua.

These facts being established by study and experiment, it seemed worth while, as the lumen of the interstitial portion of the Mullerian tract is so tenuous, to short-circuit this part of the canal by implanting the more readily patent portions of the oviducts directly into the endometrial cavity.

Technique.

A Kelly nephrectomy needle is passed from the vagina through the cervix up to the top of the fundus uteri. It is clamped *in situ.* The abdomen is opened and the whole field surveyed. Any adhesive veils of peritoneum around each tube are freed.

Any morbid convolutions or sulci in the free margin of the tubes are straightened. The fimbriated ends which may be only phimotic but more often are closed, are then opened by a dissector or fine scissors, and a fine probe or bodkin is passed gently along the lumen of each tube up to the block at the cornua.

A Spencer Wells forceps is applied and each tube is cut across at this position. The bodkin is now projecting from the proximal end of each tube Its eye-hole is then threaded with a long piece of Japanese silk worm gut, which is drawn through each tube so that about six inches remain on the distal sides and about 14 inches at the proximal ends, ready to be threaded at the termination of the next stage of the operation into the eye of the Kelly needle.

A Myomectomy clamp is now fixed on the cervix and a transverse incision down to the endometrial cavity is made across the fundus from cornu to cornu. The line of the fibrosed and interstitial part of the tube is seen but not excised.

The threaded tube with its intact mesentery is now snugly and rapidly placed in the V shaped groove at each cornu so that about half an inch of each proximal end projects well into the endometrial

cavity. The silk worm-gut threads are placed in the eye of the Kelly needle and it is withdrawn.

The fundal incision is then closed with deep and superficial No. I, 20 day catgut as in a Cæsarean section.

The clamp is removed.

In some cases a fine anchoring stitch through the muscle and peritoneum of each tube is advisable.

All oozing is attended to, the uterus is ventrosuspended and the abdomen closed.

Two weeks later the silk worm gut threads are withdrawn without any pain, in the ward.

Case Report.

Mrs. D. aged 25. History of two previous abdominal operations and 4 miscarriages. Admitted to the West London Hospital with a typical funnel pelvis. She and her husband demanded a sterilisation operation after the Cæsarean. This was done by ligation with silk and exsection of the cornua.

Twenty months later she came to the O P. Depertment asking if she could have another baby. I informed her of the possibility if she would admit to tubo-uterine implantation. This was done as above described, in September 1935. On November 14th, the enclosed Lipoidalogram was taken Both tubes are patent as will be seen.

Summary.

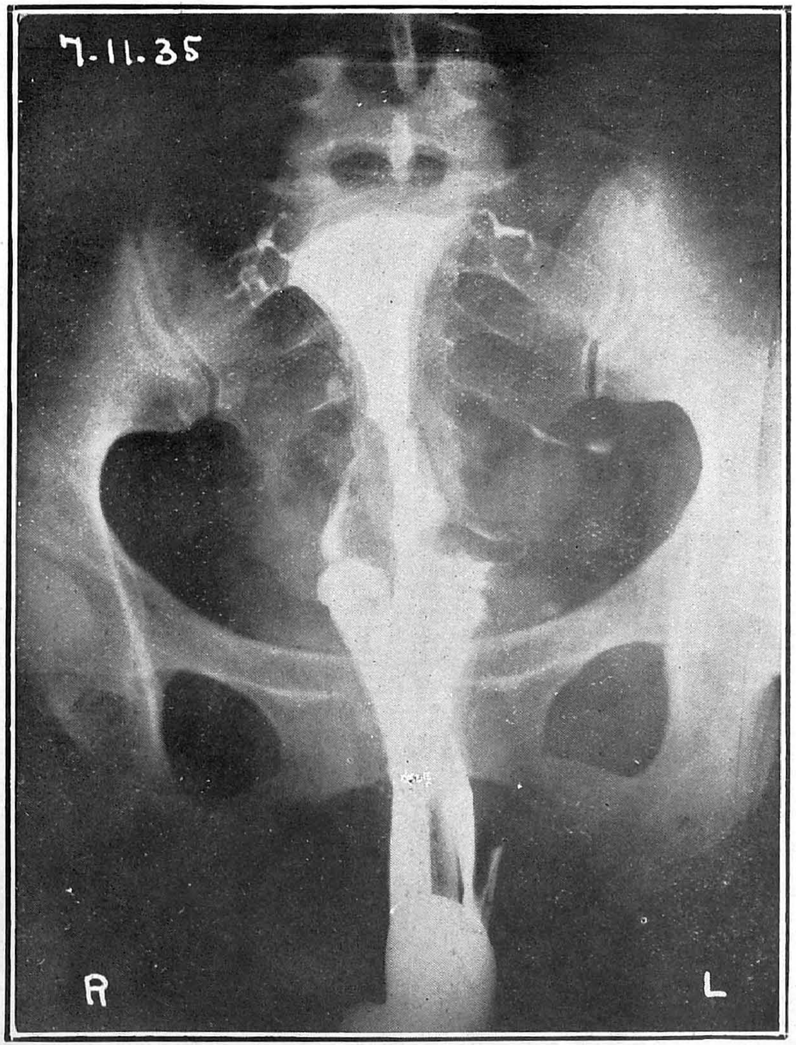
An explanation is given of the frequent failures to obtain patency after plastic operation on the tubes, the cause being reocclusion of the interstitial portion of the tract which is extremely fine in calibre.

An easy method of testing the patency of the Fallopian tract during operation is described.

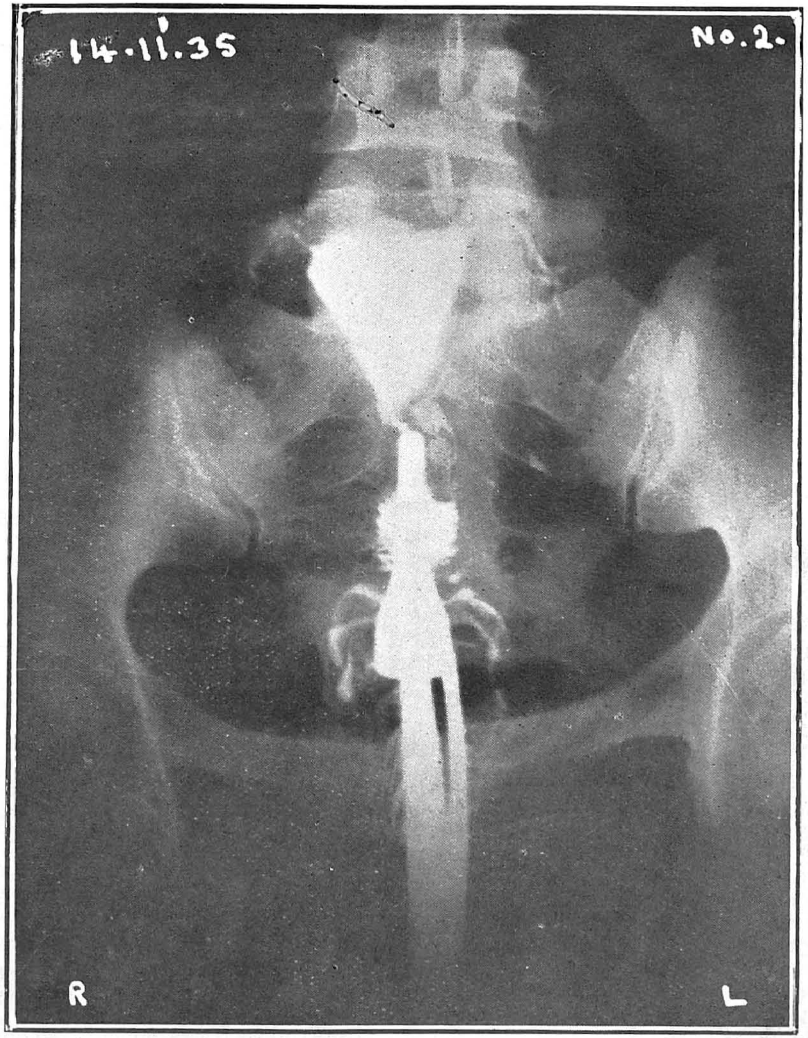
The technique of tubo-uterine implantation is given.

A Hysterosalpingogram is shown to demonstrate the result eight weeks after operation.

It is hoped that this operation will be found useful in India.



Hysterosalpingogram taken 8 weeks after operation.



Lipiodologram taken on 14th September 1935.

DISCUSSION.

(OF PAPERS READ IN THE AFTERNOON.)

Lt.-Col. Shastry (*Tinnevelly*).—He cited a case of central placenta praevia for which he did a Caesarean section, with ultimate good result, though the patient developed phlebitis and mania as postoperative complications.

With regard to early carcinoma of cervix; he advocated vaginal hysterectomy by Schauta's technique without wasting time over the pathological examination, etc. He cited two cases of cancer cervix living for some years after vaginal hysterectomy.

As for functional bleeding, he strongly recommended auto-haemotherapy: 10 c.c. of the patient's blood into the gluteal muscles.

Dr. N. A. Purandare (*Bombay*).—He was very much in favour of external version in cases of placenta praevia because the head was usually floating in these cases. There was no need for bipolar version.

He spoke about a case of endometriosis of the right ovary and a polycystic left one, with a history of continous bleeding for six months, cured by operative treatment. He cited a second case of continuous bleeding in a newly married young woman of 20, who had enlarged cystic ovaries, after partial resection of which the bleeding disappeared.

Col. Hingston (*Madras*).—He was a believer in the expectant treatment of placenta praevia cases. He would try to prolong the pregnancy up to 9 months by rest and sedatives and then deliver the case, as thereby he saved more children. He did not think that maternal mortality was any more at the 9th month than at the 8th or 7th month of gestation. In cases of profuse haemorrhage, however, he would immediately deliver by Willett's forceps or pituitrin, if the head was presenting, and by bringing down a leg if breech presented.

Many cases of functional uterine haemorrhage, according to him, were due to fibrosis. A large number of them were benefited by X-Ray, while in others he found parathyroid and calcium effective, reserving hysterectomy to severe cases.

Dr. K. S. Sivaramakrishna Iyer (*Madras*).—He presented the statistics of the Rajah Sir Ramaswami Mudaliar Lying-in Hospital, Madras, for 10 years.

122 cases of accidental haemorrhage,
with about 7 per cent maternal mortality, and
67 per cent foetal mortality; and

135 cases of placenta praevia,
with about 12 per cent maternal, and
74 per cent foetal mortality.

He found in his cases that the mothers who died, had several co-existing complications like anaemia, malaria, hookworm, repeated childbirrh, or some form of toxaemia, conditions which could be remedied. He pleaded for antenatal treatment and advice as to spacing of pregnancy.

He laid considerable emphasis upon a careful clinical investigation of all cases of placenta praevia before deciding upon the line of treatment; any additional complication like anaemia, toxaemia and the amount of blood loss as estimated by the constitutional symptoms and the capacity of the woman to stand any further loss of blood. He would choose a line of treatment which will entail a minimum loss of blood, a minimum interference, with a minimum amount of injury, and with maximum amount of aseptic care.

Dr. Allen.—She recalled a terrible experience of hers in placenta praevia: a case of central placenta praevia complicated by a tremendous hydramnios. The patient died on the board after a high rupture of membranes, due to a sudden, uncontrollable haemorrhage.

She was against spinal anaesthesia for Caesarean section. She lost a case, the only one she did under spinal, and attributed it to the sudden release of intra-abdominal tension.

Dr P. Rama Rao *(Madras)*.—He advocated irradiation of the spleen in cases of functional haemorrhage. The effect was noticed between 6 to 24 hours after irradiation being due to increased coagulability of the blood. He thought that some cases responded satisfactorily to irradiation of the thyroid and the pituitary. He cautioned against deep X-Ray therapy to the ovary in the young In climacteric haemorrhages, one could safely give X-Rays or Radium. By X-Rays, a two-fold effect could be obtained: a diminished blood supply to the uterus by the endarteritis obliterans of the vessels and secondly by diminishing the function of the ovaries.

He advised combined Radium and deep X-Ray therapy for cancer cervix, as he thought that the primary mortality of hysterectomy was

high. The disadvantages in radiotherapy were the blood changes which he said could be controlled by adequate treatment.

Dr. Subodh Mitra (*Calcutta*).—He dwelt upon the necessity for a well-planned and rational line of treatment for placenta praevia in the rural areas.

In functional haemorrhages, he had tried blood injection with good results. He knew of a case of a young girl who had 600 mgm. hours of Radium for bleeding and she got pregnant subsequently.

For cases of cancer cervix, he used only Radium from 1926. Of late, he was doing hysterectomy by the vaginal route. As for the primary mortality of the operative treatment, he had only one death in 44 hysterectomies.

Dr. Chamanlal Mehta (*Bombay*).—He spoke strongly in favour of the simple methods of treatment in placenta praevia—rupture of membranes, a binder and an injection of pituitrin or thymophysin. He could always rupture the membranes with a long probe to which he improvised a handle. The only indication for Caesarean was a central placenta praevia in an elderly primi, with a rigid cervix. In other cases of the central variety, he would do an external version and pull down a leg through the placenta. He considered fibrosis uteri as the cause of many cases of functional haemorrhages and recommended Radium or X-Ray after a preliminary curetting.

Dr. Hart (*Hyderabad*) —He said that it was courting disaster to allow a case of central placenta praevia to grow to term when the child would get bigger and so would the placenta. In all cases of placenta praevia, it was safer to empty the uterus as soon as possible.

He would advice X-Ray for functional haemorrhages at menopause; but for young women, he preferred small doses of radium. He knew of three young women who became pregnant after radium treatment for bleeding.

4TH JANUARY 1936.

(Forenoon, 10 to 12-30 p. m)

THE PLACE OF RADIUM THERAPY IN GYNAECOLOGICIAL PRACTICE.

By Dr. A. L. Mudaliar, M.D., F.C O G.

(Obstetric Physician & Gynaecologist, Govt. Hospital for Women & Children, Madras.)

One of the most valuable therapeutic agencies placed in the hands of the Gynaecologist in resent years is Radium. Its use however is attended with risk if its limitations and methods of application and contraindications are not correctly appreciated.

A few points in the action of Radium and mode of usage may here be noted. There are three forms of emanations given of Radium, what are known as alpha, beta and gamma rays.

The alpha rays are soft, of low penetrative power and are stopped by a sheet of paper or a c. c. or two of air.

Beta rays are absorbed by thin metal screens, of silver or brass or by tissue such as rubber.

Gamma rays are extremely penetrative both for metal and living tissue.

There are three actions resulting from the use of Radium on living tissues. Biological activity is stimulated by small doses of Radiation, suspended by moderate doses and destroyed altogether by large doses. The chief action to be noted is the destructive action which is the basis of radium therapy.

Another factor to be noted in the effect of Radium on tissues is that rapidly growing tissues are more sensitive than slow growing tissues and undifferentiated or embryonic cell types are more sensitive than well differentiated cell types. This selective action is used in in Radium therapy. The ideal before us in Radium therapy is the approximate use of this difference in sensitivity between disease and normal tissues around them, such that the cancerous elements, for instance, may be destroyed and normal tissues remain unaffected.

The problem in the radium treatment of an extensive carcinoma of the cervix uteri is to give a sufficient dose of the penetrative (gamma) rays to destroy the cancer cells throughout the pelvis, without causing Beta ray sloughing into the rectum or bladder or ureters. In endeavouring to secure this effect, four things must be carefully considered.

(1) Screening—This may be :—

(*a*) Metal and rubber screening done through 5 m. of silver, 1·5 m. of brass, or 2 m. of soft rubber tubing.

(*b*) Distance screening. The effect of the Gamma rays diminishes rapidly with the distance from the radium.

(*c*) Tissue screening—done by gauze packing.

(2) The situation in which the Radium is placed.

(3) The packing of adjacent organs.

(4) Radium dose available.

There are four distinct ways in which Radium can be applied :

(1) *Interstitial irradiation* —By this is meant the implantation of Radium in the tissue to be treated. The Radium is generally contained in platinum needles. This method is very widely used in the treatment of cancer of tongue, lip and breast. I have used in certain proliferating types of cancer of the cervix where the cervical canal is practically occluded, as a preliminary to the cavitary method to be described later.

(2) *Surface irradiation.*—In this technique, the applicators are generally in the form of flat plaques which are placed directly on the skin and usually left in position for a comparatively short time.

(3) *Cavitary method.*—The applicator is put into one of the natural cavities of the body, *e.g.*, the antrum of the nose, the vagina or the cavity of the uterus. The great advantage of this method is the fact that no tissues are disturbed.

(4) *Distance therapy.*—Here the Radium is placed at a greater distance from the skin. A large quantity of Radium, is used at a great distance from the skin to irradiate deeper tissues from a distance in much the same way as an X-ray tube is used. This large quantity is often spoken of as a Radium bomb and the term " Radium beam therapy " is now used to describe this mode of application.

The dosage of Radiation is descirbed in milligramme hours or millicuries. Several factors have to be noted, such as :

(1) The amount of Radium element.

(2) The exact dimensions of the container.

(3) The thickness of the filter.

(4) The duration of application.

A simple method of calculation is to take the dose of Radium used and the number of hours of application. Thus, if 50 mgm. of Radium are used for 48 hours, the dosage is 50 × 48 or 2400 mgm. hours.

It is impossible within the time at my disposal to describe at any length the details of Radium therapy, advantages and disadvantages of the several methods, indications and contraindications. I can only give some of the principal disease conditions in gynaecology for which Radium is used in combination with Deep X-Ray therapy or surgical therapy or alone.

Malignant diseases of the uterus, cervix or vagina—Radium is most widely used in such malignant diseases, but it is a mistake to suppose that its use need be confined to such conditions.

Cancer of the Cervix.—Although there is still some controversy regarding the relative values of Radium therapy and surgery, the majority of gynaecologists throughout the world consider that radiotherapy is likely to give better results than excisional surgery. In our own practice, we have come to the conclusion that taking the type of patient we meet with, the undernourished, devitaminised, anaemic case, probably the subject of previous biological diseases, the risk of surgical therapy in most cases, is so great that we prefer radiotherapy. In the absence of contraindications, operation is the method of choice in really early cases. The application of X-Rays and Radium in a fairly advanced case may not cure the condition, but produces so much relief that it should be attempted with care.

The Radiological Subcommission of the League of Nations has suggested a clinical classification of cases into 4 groups :

Group I. Operable—disease is limited to the cervix and freely movable.

„ II. Borderline—Extension of the cancer to the vaginal fornices or to the parametrium close to the uterus but so localised that the mobility is only restricted or relatively unaffected.

Group III. Inoperable—Extensive infiltration of parametrium with-fixation of the uterus.

,, IV. Advanced —Invasion of adjacent structures or secondary deposits.

The technique that has been adopted varies in different clinics but we have a preference to the Stockholm technique. Care must be taken to see that a haematological examination is made, that the general condition of the patient is improved and the anaemia treated, that the vagina is cleaned as far as possible and particularly that the uterus is drained. In a fair number of cases a pyometra is present and unless it is drained, a severe reaction will follow.

And here may I appeal to the profession to help in the early diagnosis of this condition. Every type of irregular bleeding should be thoroughly investigated and if, in any case, blood on the examining finger is present on making a P. V. or the cervix begins to bleed even slightly, I take it as a case of cancer till the contrary is proved.

Cancer of the body of the uterus.—Here there is greater scope for surgical therapy. Surgical measures, *i e.*, pan-hysterectomy should be adopted, and an X-ray treatment to whole pelvis should be given in addition Where hysterectomy is contemplated, intrauterine radiation as a preliminary, is of definite value in some cases. We believe when the operation is decided upon, it is better to perform a complete hysterectomy together with the removal of the ovaries and tubes. If an operation is contraindicated, an intrauterine application of Radium should be given supplemented by a vaginal application in the fornices.

Other malignant growths of the female generative tract.

Vagina.—Excepting venereal wart, most primary vaginal new growths are malignant and nearly all are epithelioma. The flat applicators are used for this purpose or the needles implanted.

Chorion epithelioma.—Is a malignant condition which arises from the chorionic villus of the ovum and not infrequently occurs after a hydatidiform mole. In view of this possibility, every patient who has suffered from a mole should be examined at frequent intervals for at least two years after the evacuation of the uterus. These occur at a comparatively early age, the youngest of my patients was 17 years. The only alternative for Radiotherapy is hysterectomy which is not an operation of choice at such an age. For this reason, I have treated these cases for some time with a local application of Radium by the cavitary method followed by the deep X-ray therapy. So far, 6 cases have been treated and all of them are doing well, the earliest treated eing over 5 years.

Benign growths of the uterus.—The commonest of these are fibroids. The treatment may be surgical, radiological and palliative. The palliative treatment was resorted to years ago, in the hope that menopause, if it sets in, will cure the condition. I cannot too strongly condemn such an attitude as the patient may be seriously risked long before the menopause set in. The chief arguments in favour of surgery are that the tumours are removed at once, that unsuspected conditions of the tubes and ovaries and of other abdominal organs, especially appendix, are often found and treated at the same time and that the function of the ovaries is maintained even though sterility follows the hysterectomy. In young women, it is often possible by myomectomy to conserve the possibility of child-bearing. The chief arguments for radiation are, the absence of primary mortality, the painless procedure, no hospitalisation, a quicker return to active and useful life, results as to bleeding and pressure as good as with surgery, and the complete or almost complete disappearance of the tumour in a large proportion, not to grow again The ablation of the ovarian function entails no bad psychic or somatic results and except for hot flushings, there is but little complaint, the patient almost invariably feeling better Fibroids have also completely disappeared without disturbing the ovarian function, and a few cases have been recorded where normal pregnancy and the birth of a normal child have occurred. I feel the decision to treat or not, by radiation should be reached after a thorough conscientious examination and consideration of all physical, economic and social problems involved. Some would limit the radiation to tumours not larger than the adult's fist, others to women beyond a certain age; yet others, to tumours causing haemorrhage. In my practice, I have used it in cases of severe bleeding with complications like albuminuria or diabetes, in women who are very corpulent with a very fat abdominal wall and the tumour not easily removable by the vaginal route, in poor operative risks from whatever cause, in those with an operation-phobia, and as a preliminery to operation in those who are extremely exsanguinated with a haemoglobin index of under 20. In such cases, even in the presence of some of the contraindications to be described later, I have used radiotherapy, knowing the risks, as the only possible transcient method of treatment till the condition improves.

Radiotherapy is contraindicated :

(1) If degenerative changes of fibroids are present.

(2) In subperitioneal pedunculated fibroids.

(3) In completely or partially prolapsed myomata.

(4) In purulent or gangrenous myomata.

(5) If pyosalpinx or malignant degeneration of fibroid is suspected.

As between X-rays and Radium, I would say that Radium should be used where the action needed is urgent. In some cases where deep X-ray therapy has not completely relieved the condition, Radium is desirable as an adjuvant.

Functional uterine haemorrhages —Experience shows that such conditions are becoming increasingly frequent, but at the same time, I must warn the practitioner against falling into the trap and taking the cases as one of functional uterine haemorrhage without thorough investigation. The first thing is to take a careful history which together with a general physical examination, will exclude such conditions as haemorrhage, connected with pregnancy, high blood pressure, and valvular disease of the heart. Next a physical examination of the genital organs, especially the cervix uteri, will exclude such conditions as carcinoma of the cervix, fibroids, polypi, etc. If there are no gross abnormalities, then treat the patient symptomatically for a week or two. If at the end of a month, there is no improvement, the uterus must be explored. Only after such exploration is it justifiable to say that the condition is due to an endocrine disturbance, such as is found at the time of menopause. The ordinary endocrine preparations available in the market have all been tried, but I must confess, with disappointing results and till something decidedly of merit is available, I have come to the conclusion that Radiotherapy is the only alternative.

In the treatment of this condition, note the age. If over 40, Radium treatment is likely to create an artificial menopause. I use 50 mgms. for 48 hours. Occasionally, menopausal symptoms such as flushing, sweating and headache occur, but are soon relieved by ovarian therapy and suitable general tonics.

In women under 40, the uterus should always be explored. I have used Radium in doses varying from 720 mgm. to 2400 mgm hours. After inserting the Radium by the cavitary method, I tightly pack the vagina with sterile gauze ballooning the fornices and thus increasing the distance between the Radium and the ovaries. 16 cases were treated with uniformly successful results, the youngest being 15 years and the oldest 30 years. In six of these cases, the menstruation returned and in two, pregnancy occurred later. Some of the cases could not be followed up. It is thus seen that the younger patient will stand a much bigger dose without producing amenorrhoea and that this method of treatment must seriously be considered in certain cases even before hysterectomy is resorted to.

Other conditions for which Radiotherapy may be tried are :— tuberculosis of the pelvic organs, certain chronic pelvic inflammatory

diseases where external radiation may be given as a method of sterilization, in certain organic diseases such as tuberculosis, chronic pyelitis, decompensated lesions of the heart, Bright's disease and grave mental troubles.

A word may here be said about the use of Radium and its effects, should pregnancy follow. When pregnancy follows irradiation for cancer of the cervix, delivery should always be by Caesarean section in the interests of the mother and sterilisation is advisable. Pregnancy following preconception irradiation for metropathia haemorrhagica, fibroid tumours, or for sterilisation, proceeds normally, and with few exceptions, parturition is normal. When, however, a stenosed fibrotic cervix is likely to cause obstruction, Caesarean section should be done. There is no definite evidence that preconception radium therapy affects the child.

DISCUSSION.

Mrs. Dadhabai (*Bombay*), regretted that Radium has been abused in this country: she used Regaud's method in carcinoma of the cervix and limited the dosage in young women. She had used radium in a large myomatous uterus, of the size of about seven months' pregnancy in a woman who was a poor surgical risk and when she saw the patient again after two years, she was doing well and the uterus was quite small in size She knew of three cases of pregnancy occurring after radium treatment, of which one miscarried at 7 months and the other two delivered naturally at term.

Dr. Subodh Mitra (*Calcutta*), stressed the importance of dosage in Radium and deep X-ray therapy. He considered that the optimum dose in cancer cervix was 6,000 mgm. hrs., supplemented by an intensive course of deep X-ray therapy. He standardised the dose of deep X-ray for Bengalee women and found it to be 600 *r*, a little more than the average for the European which was 550 *r*, and thought that the tropical climate was a possible cause.

He then discussed the question of treatment of cancer cervix; pure and simple radiation *versus* operation plus radiation. He was employing the latter procedure. Regarding the treatment of fibroids, he said that since 1930, he had treated about 80 per cent of cases of fibroid with radium and deep X-ray therapy, with satisfactory results, but some of them returned with haemorrhage and anaemia and at operation he found areas of degeneration in the tumours. He believed that good results could be obtained in malignant tumours of the ovaries with deep X-ray therapy.

Col. Hingston (*Madras*), stated that in his experience, cancer complicating pregnancy was seen early in pregnancy and that a hysterectomy must be done straight off. He thought that Radium was not the treatment, as it had untoward results on the foetus. He considered that only experts should handle Radium, the expert being not necessarily a medical man. The practitioners were rather chary of recommending radium to their patients, unless they were absolutely sure that they would not have any disastrous results.

Dr. A. L. Mudaliar, in replying, said that he preferred radium treatment to hysterectomy in chorion epithelioma, in view of the disastrous psychic effect of a hysterectomy on a woman in the society in which she lives. With improved technique and the proper packing with gauze of the whole vagina, particularly the fornices, and with frequent emptying of the bladder, there was no fear of fistulae forming.

As to the question of who should give the radiotherapy, he felt that the X-ray therapy should be given by the X-ray specialist, while radium therapy, he strongly maintained, was the province and privilege of the gynaecologist.

With regard to pregnancy complicating cancer, he said it was one of the rarest conditions. He had seen only four cases in 15 years. He maintained that Radium had a definite place in cancer complicating pregnancy. He advised the conversion of the presentation of the foetus to one of breech before applying radium.

SATURDAY, 4TH JANUARY 1936.

(Forenoon, 10 to 12 30 p. m.)

Subject for Discussion : **DISPLACEMENTS OF THE UTERUS.**

OPENED BY MISS H. M. LAZARUS, M.B., B S., F.R.C S. (E.), M.C.O.G., W.M.S.

There is perhaps no subject in the whole field of Gynaecology concerning which more divergence of opinion has been expressed than that of uterine displacements and their treatment. The literature on this subject is already so extensive that I make no apology for opening a discussion on the subject In India about 75 per cent of the cases in a Gynaecological clinic are due to displacements of the uterus. This is due chiefly to unskilled attendance at child birth and poverty of the people who have to return to the strain of house-hold work or hard labour shortly after delivery and in a Congress like this we cannot spend too much time on the subject.

The commonest displacements met with in India are retroversions and prolapse of the uterus and I should like to include in this paper inversion of the uterus owing to the seriousness of the condition.

Retroversion of the Uterus.

Do all cases of retroversion of the uterus require treatment ? I say no. The uncomplicated, moveable, retroposed uterus produces no symptoms and operations done for this condition alone are unwarranted, unnecessary and indefensible. The so-called symptoms of retroversion are not characteristic of the displacement but may be quite characteristic of the various complications that are so frequently incidental.

The symptoms may vary in direct proportion to the kind and extent of the associated lesions. On careful examination it is possible to find out the particular pathological lesion causing the symptoms in each case.

There may be extragenital conditions, the symptoms of which might simulate those produced by retrodisplacement. The relation of sterility and habitual abortion to retrodisplacement of the uterus is problematical. The existence of either of these conditions should not be considered as indications for ventral suspension or fixation.

Occasionally the symptoms may be due to mechanical interference. It is by definite clinical observation that expert Gynaecological opinion can come to such a conclusion.

The variety of pathological and symptomatic combinations is infinite. Each case therefore must be studied on its merits There is no rigid rule that can govern the character and proper management of retroversion of the uterus. The symptoms commonly met with are leucorrhoea, dysmenorrhoea, backache and menorrhagia and perhaps in a small proportion of cases, sterility. The symptom producing retroposition is most prevalent in parous women and the lesion causing the symptom is demonstrable in the great majotity of cases.

Retroversion is generally divided up into congenital in unmarried and nulliparous women and acquired in the parous. I believe that the so-called congenital retropositions are more often acquired, than from birth, and is due to girls and young women remaining long with a distended bladder which displace the uterus posteriorly and although the uterus may regain its position on emptying the bladder the frequent overdistension stretches the round ligaments and thus leads to a retroversion with or without symptoms. Prophylaxis is hence very important—careful supervision of girls during puberty, general hygiene, diet, proper exercise and regulation of the bowels. It is rarely necessary to treat retropositions of this type. Marriage and pregnancy activate the genital physiology most favourably in many cases and unless the disability is severe, radical measures are only infrequently indicated.

During the early weeks of pregnancy and in the puerperium patients should be taught to empty the bladder frequently and not to fight against Nature and try to stop the natural frequency of micturition during these periods for the same aforesaid reason. Although the sacral promontary is there to support the involuting uterus in the puerperium, patients must be encouraged to lie more on their sides or in the prone position rather than in the supine position not only to effect proper drainage and involution but also to prevent retropositions. All tears of the cervix and perineum should be repaired immediately after delivery and the perineum should be repaired in layers and not merely with through and through sutures.

Every parturient woman should·be examined about the 6th to the 12th week after delivery for retrodisplacements of the uterus and if present, the uterus should be manually replaced and postural exercices advised. Pessaries—cradleshaped—Hodge's or Albert Smith's—are not advocated either as a routine treatment after abortion, miscarriage or labour in conjunction with posture, or exercise or otherwise. The

pessary does not help to cure the condition but stretches the utero-sacral ligaments so that after the removal of the pessary the condition of the retroversion is much worse than before.

Operative treatment.—When dysmenorrhoea and sterility are the chief complaints, I perform insufflation of the tubes, dilatation of the cervix and curetting of the uterus and advise the patient to lie more in Sim's position than on her back, and pregnancy often supervenes within a year or two. When, however, the condition has progressed to the stage of definite anatomical impairment, no amount of postural or calisthenic treatment will suffice and operative treatment is indicated. Of the hundred and more operations devised for retroversions, it is perhaps fair to say that each and every one may in a properly selected case effect an anatomical or a symptomatic cure or both. A standardised technique will never be recognised as applicable to all cases of retroversion of the uterus. Correction of the trouble implies replacing the fundus and adnexa upwards and forwards and raising the cervix upwards and backwards and maintaining this improved position But that is not all. Certain future contingencies must be provided for and the most troublesome of these is child-bearing. In the child-bearing period no method may be employed that would interfere with subsequent pregnancy or labour. Also, the method that is employed should give substantial promise of maintenance of the forward position of the uterus through the crucial test of childbearing.

For elevating the fundus and adnexa, many structures have been tried. The round ligaments, the peritoneum, the subperitoneal connective tissue, strips of tissue from the aponeurosis of the abdominal wall, strips of fascia lata of the thigh and direct union of the fundus uteri to the muscular layer of the adominal wall. Of the various methods tried out, the round ligament has proved to be the only one possessing primarily the required strength and stability and maintaining it through the strain of childbearing.

Fixation of the uterus to the anterior abdominal wall affords a strong anterior attachment but it produces disasterous results in many cases of labour. The unyielding fixation of the uterus to the abdominal wall prevents the symmetrical enlargement of the growing uterus. The anterior uterus gets piled up as a thick mass in front of the pelvis, while the posterior wall expands and becomes seriously thinned out even to the point of rupture and I have seen cases of dystocia, rupture and obstruction due to this. No surgeon therefore has a right to perform an operation for fixation of the uterus or suspension, that carries with it the danger of intestinal strangulation, sacculation during pregnancy or dystocia during labour. The only

indication for ventral fixation is in a case of bilateral salpingectomy when the uterus is left behind and it has a tendency to retroversion. In such a case ventral fixation is the operation of election and not fundal or posterior fixation. The operation of choice for restropositions is the sling operation of Baldy-Webster which is the most efficient means of providing adnexal elevation and support It is less painful than Gilliam's, as it causes no trauma of the muscles and fascia.

Prolapse of the Uterus.

In order to prevent prolapse of the uterus and its associated complications, one must first understand the course and method of production of such conditions. Undoubtedly congential defects in the devolopment of the supporting structures such as fascia, ligaments, muscles and the inclination of the pelvic bone as well as malpositions of the uterus, are great factors in the production of prolapse. If this were not true, every woman subjected to one of the activating causes would be going about with a prolapse of one or all of the pelvic organs.

It is well now to pause and note the sequence of events. First there is a retroversion with elongation and hypertrophy of the cervix and intra-abdominal pressure is directed on to the fundus of the bladder, due to the absence of the uterus from its anteverted and anteflexed position. This intra-abdominal pressure continuing to act, sends the bladder downwards, thus forming a cystocele and urethrocele. The bladder downwards thus forming a cystocele uretherocele. The bladder and uterus both descend and with them drag down the rectum, forming a rectocele and pressure still continuing leads to inversicn of the vaginal wall—*procidentia*—and with it an enterocele Most of these cases occur in parous women though I have seen three cases of *procidentia* in nullipara, during the last five years due to defective anatomy and bad hygienic conditions. Childbirth forms the link in the chain which eventually results in prolapse. A precipitate labour or one that is hastened by the administration of pituitary extract before full dilatation or even bearing down in the first stage of labour, may so loosen the attachments of the bladder, rectum or uterus, that they will descend in the path of least resistance . Again, a forceps delivery, expecially if performed through a partially dilated cervix, or any difficult operative manouvre due to the introduction of a closed fist, may strip and tear the fascia, ligaments and muscle to the extent that only a most thorough reconstructive operation will later support the pelvic organs. In order to prevent such a thing from happening, it is sometimes necessary to perform a prophylactic episiotomy during a protracted second stage of labour expecially in cases in which the bladder

is being rolled off its anterior attachments or in which the pubic arch and the correspondingly contracted bis-ischial diameter forces the head through the soft parts.

All lacerations of the soft parts, cervix, perineum and vagina, should be discovered and immediately repaired. Frequently submucous lacerations of the muscles and facia occur without a break in the skin or mucous membrane. A semicircular mattress suture produces satisfactory results in this type of cases. The importance of post-natal clinics even here cannot be too greatly emphasised. In old relaxations of the posterior vaginal wall the patient must be taught to exercise the sphincter vagina and levator ani muscles by alternately drawing in and relaxing the sphincters and raising and lowering the trunk in the opisthotonous position. The bowels should be regulated and the patient should not strain at stools. In cases where the sutures have not taken due to sepsis, secondary suturing should be done as soon as the sepsis has cleared and I have had quite good results from this.

Prolapse of the uterus is essentially a surgical disease and even here I confirm that a pessary is no treatment for the condition even if the patient is of advanced age unless the patient has serious cardio-renal, pulmonary or other complications.

All patients with uterine prolapse fall automatically into two groups, young women in whom the preservation of function is a matter of vast importance, and older women in whom the preservation of function is a matter of small importance or of no importance. In India, the majority of cases fall into the former group for two reasons as already stated—bad midwifery, and early return in the pueperium to hard labour and lifting of heavy weights.

In young women of the child-bearing period, only those measures should be employed which in addition to correcting the displacement will conserve function and permit of safe future pregnancies. The question therefore is not only the preservation of the uterus but the preservation in its normal anatomical relationship to the rest of the pelvis.

The main supporting structures of the uterus in the upper pelvic plane are the broad ligaments, especially the lower part of them which form a strong mass of tissue which extend from the cervix outward and upward to the pelvic wall. So important are these in supporting the uterus that they are called the cardinal ligaments. In all cases of uterine prolapse, this cardinal ligament of each side is stretched out to undue length. When this strong portion of the broad ligaments of each side is adequately shortened, a most important step has been taken towards permanent correction of the prolapse.

The best operation for the correction of the fascial defect by the necessary plastic work vaginally, is a modified Fothergill, if I may call it so. The dissection of the anterior vaginal mucous membrane is more rapidly done by passing the closed scissors from below upwards and extends to almost ¼" below the external urinary meatus in cases of urethrocele. In prolapse of Douglas' pouch, the posterior incision is extended beyond the enterocele. Of the 649 plastic operations on the vagina that were done by me and my colleagues at the Gosha Hospital for prolapse of the uterus (of which 324 were perineorrhaphies, 213 anterior colporrhaphies, 112 amputations of the cervix) only one case returned with a hernia of the left lateral wall. No cases returned with atresia of the cervix or recurrence of the systocele or rectocle.

I should like to draw your attention here to two important points. Before amputation of the cervix, I always introduce a haemostatic suture of No. 5 silk on each side of the cervix In this series of cases I have had only one case of post-operative hemorrhage and that was the one who had the lateral hernia. The second point is in closing up the perineum. I do it in layers and have no external sutures at all. I begin with bringing together the vaginal mucous membrane with a continuous catgut suture, the levator ani with deep buried silk interrupted sutures and the skin with two subcuticular layers of Lambert sutures so that there is no cutaneous puncture for the entrance of bacteria and it is easy for nursing as there are no sutures to catch any discharges from the vagina. The patient's knees need not be tied together when in bed.

In elderly widows long past the menopause, the simplest and quickest operation is LeFort's I performed 7 such cases with very satisfactory results, the oldest patient being 73.

I am not in favour of the interposition or transposition operation of Watkins', as its use is very limited. It is indicated only when the prolapse is of moderate degree and the uterus is of approximately normal size and cannot be employed when there is marked alteration of the suspensory ligaments of the uterus and when the cervix is hypertrophied. I performed this on only one patient.

When the uterus is atrophied and the whole uterus lies in the hernial sac and the prolapse is complete, vaginal hysterectomy with proper restoration of the pelvic floor gives satisfactory results. I have done this on two patients.

Kocher's high ventral fixation without repair of the pelvic floor is no radical cure for prolapse of the uterus. The cervix hypertrophies and descends, causing elongation of the cervix and the bladder and rectum descend along with it. I have already mentioned the other dangers of ventral fixation.

Inversion of the Uterus.

In the acute stage where there is no shock and the placenta is adherent, remove the placenta and reduce the inversion under an anaesthetic.

No fewer than 12 different operative procedures have been suggested for the correction of the inversion of the uterus after the acute phase has been passed or the condition has become chronic and manual reduction has become impossible. Most of these operative procedures are carried out by the vaginal approach and range from the simple incision of the posterior portion of the constricting cervical ring as suggested by Hirst, to the more extensive colpho-hysterotomies of Kistner and Spinelli done per vagina In Haultain's method, the ring is incised in the middle line posteriorly through the abdomen and the uterus reduced by passing a finger through the uterine opening to a point below the inverted fundus and effecting reduction by making pressure with the finger against the fundus.

The Spinelli operation for chronic inversion is done per vagina and is preferable for the following reasons: it is simple, there is no hæmorrhage, no danger of sepsis, no displacement of the uterus after the operation, if properly done, and the patient is more willing to consent for the operation as it is not done abdominally. I had two cases one of whom was 20 years old and the inversion of 6 months duration and 1st para. The second patient 23 years old, 2nd para, 1 year duration. In both I did a Spinelli with no drainage of the peritoneal cavity and with an uneventful recovery in both cases.

TREATMENT OF RETRODISPLACEMENTS—SHORTENING OF ROUND LIGAMENT BY PLEATING.

(By Miss Ida Scudder, M D., D.SC.)

In considering the treatment of retrodisplacements of the uterus, one is faced by a variety of conditions which should be considered before any operative procedue is undertaken. In all cases of retrodisplacements, the condition of cervix, perineal body and vagina should be studied with care and repaired if necessary before opening the abdomen. If this repair is neglected, the abdominal operation for retroversion, may not accomplish what is desired. Therefore a careful study of each case should be made to ascertain the exact cause of the displacement, after which the selection of the treatment to fit each individual case must be adopted. An accurate classification of retrodisplacements is necessary.

In every individual case treatment depends on the particular conditions found. A study should be made of definite pelvic symptoms—endometritis—mild prolapse—backache—dyspareunia and malaise, etc. There are certain cases in which the symptoms are not due to the retrodisplacement but to other conditions. The operations that have been devised for the cure of retroversions are many. One must consider the operative correction of retrodisplacements, which can be accomplished by procedures which will utilize the natural supports of the uterus. The points to be considered are :—

1. If the body of the uterus can be easily raised and caught with the abdominal fingers and thus brought forward into the normal position, we have a movable uterus.

2. Is the uterus movable or fixed :—One at times finds a retrodisplacement in virgins, where local treatment per vagina is to be avoided. The patient may suffer from backache, pressure distress and illhealth. The uterus can be massaged per rectum, and after a few treatments can be replaced. It should be followed by knee-chest position daily. This may be sufficient, for if the intra-abdominal pressure is restored, the fundus may retain the normal position. If not and symptoms recur, the virgin patient may be given chloroform and a pessary inserted and worn for 6 months, the pessary being cleansed and replaced after each menstrual period.

In the graver cases of retrodisplacements where some pathological condition exists, the procedure is more complicated.

Operative treatment should be considered :—

1. In cases where knee-chest position and pessary do not keep the uterus forwards and symptoms of distress continue.

2. In cases where adhesions have formed and cannot be broken up by giving long hot douches followed by massage per vagina or rectum to break up the adhesions which are a sequelae of pelvic cellulitis without tubal involvement.

3. In all cases complicated by disease of the adnexa—tubal, ovarion, or appendiceal.

4. In cases of tumours, adhesions, etc., which cannot be treated externally.

5. When the pelvic distress is aggravated when patient is up and about and during the menstrual period, for this indicates a certain amount of pelvic inflammation.

6. When pelvic distress cannot be relieved by palliative treatment.

7. When perineal body is torn and entire vagina relaxed and cervix is torn and hypertrophied.

Choice of Operation.—Having made a systematic study of all the conditions of the pelvic organs and having decided on an operation one proceeds to prepare the patient for a vaginal and an abdominal operation. After the cervix, vagina and perineum have been repaired, the abdomen is opened—either by the transverse or median incision; the uterine body carefully examined and gently raised to its normal anterior position by breaking down all adhesions in posterior cul-de-sac. The adnexa are then examined and treated as required—appendix removed, as in all pelvic inflammatory conditions the appendix is often involved or gives rise to trouble later.

Now comes the choice of operation. Of all the structures the round ligament has been proved to be the one possessing the strength to hold and maintain the uterus even through the strain of child-bearing.

Strive to do the operation which does not cause any anatomical change. Let us for a moment consider the operations most often performed.

Ventro-Fixation may be done after 45 years of age, but not during the child-bearing period. It is almost discredited by gynaecologists in the present day. The strong anterior attachment to the abdominal wall caused by ventro-fixation has proved dangerous in many cases of pregnancy.

The unyielding fixation of the uterus to the abdominal wall prevents symmetrical expansion of a pregnant growing uterus and in he latter months of pregnancy the posterior wall may become seriously thin and rupture has been known to occur.

Ventro-suspension, gives more freedom but it also has its serious complications, *i. e.,* the peritoneal adhesions stretch easily, may become a long band round which the intestines have been known to slip, causing intestinal obstruction, or after the pregnancy is over, the elongated band allows the uterus to fall back.

Webster-Baldy or sling-operation, often gives excellent results expecially if combined with Curtis operation. In this the uterosacral ligaments are sutured together with silk sutures as well as the posterior leaves of the broad ligament, forming a firm basement support for the uterus.

The broad ligament is now punctured by forceps near the uterus and beneath the ovarian ligament and the round ligament grasped and pulled through the opening. Same procedure on opposite side. The round ligaments are drawn through this opening and sutured to each other and to the uterus posteriorily about one inch from the top of the fundus. As the round ligaments are embryonically a part of the uterus, they hypertrophy and lengthen during pregnancy and involute and shorten after pregnancy is over.

Gilliam's or Transplantation of round ligaments into the abdominal wall is very frequently used.

The drawbacks to Gilliam are :—

1. Patient not infrequently complains of pain or tenderness over the position of the ligaments in the abdominal wall.

2. In late pregnancy patients complain of pain and a drawn feeling.

Shortening the Round Ligament by pleating.

This operation should not be used if the vaginal vault is prolapsed.

The transverse incision is preferable. After the abdomen is opened, the uterus is raised, all posterior adhesions freed, adnexa examined and treated.

About ½ inch from the point where the round ligament leaves the abdominal cavity (internal abdominal ring) a pleating suture of No. 4 silk is inserted along the length of the ligament up to the point where it joins the uterus. The ends of the suture are left long, after pleating the round ligament by pulling the ends causing the round ligament to lie in folds.

Next pass a forceps gently between the aponeurosis and the rectus muscles at a point, corresponding to the round ligament. Pass forceps outward to beyond the outer margin of rectus muscle until a point near the internal abdominal ring is reached. The point of forceps is now directed inward and is made to follow a track parallel to the round ligaments immediately in front of it and under the peritoneum of the broad ligament until the site of pleating is reached—an assistant holds the suture ends to make taut the round ligament. The peritoneum is now perforated—the ends of the suture on the round ligament are caught and withdrawn bringing both ends through the path made by the forceps.

Pass a Reverdins needle through the aponeurosis about an inch from its cut margin. The sutures when they emerge are about ½ inch apart. When the ends are pulled upon and tied the puckered round ligaments are drawn hard up against the under surface of the abdominal aponeurosis. Repeat on other side.

The sutures are then tied so that the pleated round ligament on either side is anchored to the deep fascia outside tho rectus muscle. One end of the suture is then passed through aponeurosis a second time and ends tied.

As the round ligament forceps are being passed, the uterus is steadied by traction on the suture which has secured the round ligament. Too much force must not be used, for fear of tearing the round ligament from its uterine attachment. Occasionally a large vessel may be wounded when passing the forceps between peritoneum and oblique muscles. The forceps should be passed fairly near the internal abdominal ring before they make the turn into the broad ligament. The forceps must be carefully and gently passed. Abdomen is closed.

Results are very satisfactory. In all the cases I have done the patient does not complain of any pulling pain in the abdominal wall and later, on examination, the uterus is found lying in a normal position.

Dr. Purandare (*Bombay*).—He agreed with the President that the pessary had a place in the treatment of displacements. For one year he adopted Baldy-Webster's method of treatment for retroversion, but was not satisfied with the results and so gave it up. He had a recurrence 6 months after operation. He now adopts the ventrosuspension. He had performad LeForte's operation for prolapse even in women older than 75, with good results. He now combines it with perineorrhaphy with better results. For inversion, he has tried Haultain's as well as Spinelli's operations and finds the Spinelli procedure more difficult.

Mrs. Dadhabai (*Bombay*).—She opined that retroversion required treatment only when complicated with conditions like cystocele, ruptured perineum, etc. She emphasised the importance of attending to the pubo-cervical fascia and the transverse cervical fascia in correction of prolapse with cystocele. She preferred the Baldy-Webster's technique amongst the abdominal operations for the condition.

She cited 4 cases of inversion—two acute and two chronic. One of the acute underwent spontaneous reduction by postural treatment, while the other was successfully treated manually. The two chronic cases were treated by the Spinelli technipue, though not without stormy convalescence.

Col. Hingston (*Madras*).—He strongly advocated fixation for retrodisplacements and prolapase. His experience from amongst nearly a thousand cases of fixation was that the cases most suited were those of sterility in young women who did not conceive within four or five years of married life.

He had seen many cases of failure with suspension done by himself, as well as others. He preferred the high fixation by means of three silk sutures. He had cured cases of incontinence of urine complicating prolapse by taking up the uterus as high as possible and fixing it up as high as possible.

Dr. Ajinkya (*Bombay*) spoke in defence of the pessary. The pessary was useful for diagnostic purposes. He advised its use for 2 months in cases of retroversion with symptoms, and if there was relief, then one could proceed with the operation. He compared an involuting puerperal uterus to a plastic model and said that in cases of retroversion of puerperal uterus, the use of a pessary after correcting its position will considerably facilitate its involution in the normal position. He also referred to the splint action of the pessary and thought it would relax the uterosacral ligaments, rather than stretch them.

Dr. A. L Mudaliar (*Madras*) said he had also, along with Col. Hingston, done rearly a thousand fixations and never regretted having done them. He explained that every trouble that arose due to pregnancy or labour was not necessarily due to the fixation done. Similarly, if a woman says she has been fixed, it does not necessarily follow she has been really fixed. On three occasions, he had demonstrated on these women that no fixation had been done; as a matter of fact nothing more had been done than a laparotomy.

He had seen cases of sacculation consequent on bad fixation but on that account, the operation should not be condemned.

Dr. Lazarus (*Madras*) in reply said she could not think of massaging the rectum as a proper treatment, as there was the danger of injury to the soft mucosa and infection with B. Coli.

Regarding the pessary, she thought that the splint action could not help in the development of muscular tissue. She would advocate more exercise for the patients during puerperium.

Ventrofixation is recommended in Middlesex and is also strongly advocated by Col. Hingston, but I still disagree with them. Ventrofixation is no operation for procidentia.

Dr. Scudder (*President*).—She had done massaging of the rectum in a very large number lately, without any disturbance. Many young women have gone home better for it.

As to the pessary, she had given it up a good many years ago, but has gone back to it in certain cases in which it has proved efficacious.

AFTERNOON.

(2 to 4-30 p.m.)

ANTENATAL AND CHILD WELFARE SECTION.

PAPERS AND DISCUSSION.

ANTENATAL CARE.

BY DR. (MRS.) E. D. ROSENTHAL (MYSORE).

Ballantyne, one of the pioneers of antenatal care calls pregnancy the Marathon Race of the mothers reproductive process and says that this time, though a time of physiology, is physiology under high pressure of all kinds and I think that there can be no doubt that this strenuous time in the woman's life needs special attention and care.

Some statistics will show this very clearly.

Ubhaya and Adisehan's studies (1929) in several towns in the Madras Presidency revealed a maternal death rate of about 18 per thousand, Graham's data (1932) show that in numerous Indian towns the maternal mortality in 1929 was still greater, many recording 30 to 40 deaths per thousand on account of childbirth. In a few cases the rates were even 70—80 per thousand. In rural areas maternal mortality seems to be very much lower, but when we read that "a preliminary survey of reporting of vital Statistics in Mysore district made in 1929 has shown that only 50 per cent of deaths and still fewer births are actually reported," rural figures become somewhat doubtful.

In Europe the maternal mortality is generally under 7 per thousand, the rates for England during 1915—1934 varying between 3·79 and 4·42 per thousand.

The figures for infant mortality (death under one year) are also to be considered. 1922—25 the average infant mortality in Bombay was 289, in Poona 827, in Madras 276, in Mysore City 225. Graham (1932) gives the average figure for the year 1912 to 1929 with 196·4 per thousand (against 85 per thousand in England for this time, reduced to 59 per thousand in 1934).

We know that in the neonatal mortality rates representing the deaths of infants in the first 4 weeks of life, death is largely accounted to birth trauma, prematurity or other defects due to the antenatal period. Half the infant mortality rate in India was occasioned by the death of children under one month.

We all know that the value of statistics is relative, but I think these appalling figures need no discussion. Balfour and Young (1929) attribute these conditions to (1) bad attendance at the time of childbirth, (2) lack of any legislation requiring registration and supervision of midwives, (3) lack of medical aid and women's hospitals, (4) lack of antenatal centres both for treatment and research.

Maternal morbidity after childbirth is a serious handicap to many women. Conditions which result in death to some patients, give rise to sickness among others and which may make the mother an invalid for the rest of her life. Much of this waste and suffering could be obviated by antenatal care. The same can be said about infant morbidity. We all know from bitter experience that the conditions which can cause death in some infants, leave permanent marks on others. Many babies that are born feeble or diseased, die after a few months of life. Others manage to avoid death, but remain weak, constantly ill and pass from childhood spent in struggles against disease to a sad adolescence and manhood, being unfit to face the struggle of existence.

I know it is one of the reasons quoted against Welfare work : you try to protect and bring up weaklings who will be only a burden for the nation. My opinion is that every child that is born should be protected and helped as far as possible, but it is a far more important part of the Welfare work that the number of babies in these conditions decreases as far as possible. Antenatal care can surely be a greater help on these lines.

Objects.

What are the objects of antenatal care? Ruth Young summarizes them as follows :

1. To make the period of pregnancy natural and healthy for the mother.

2. To keep the pregnant woman under observation, so that abnormal conditions may be detected before they become dangerous, and removed, if possible, or appropriate precautions taken.

3. To surround the unborn child with the best conditions and so produce a strong and healthy baby.

4. To secure that the time of delivery shall be free from danger and as painless and natural as possible.

Antenatal work in Western Countries.

What is done in the Western countries on the line of antenatal work? I shall not give a report of all the remarkable antenatal work that is done in the different countries. I want only to characterise two

principally different ways of antenatal care by giving the examples of England and of Germany.

Concerning England I quote the report of the Chief Medical Officer, Ministry of Health for 1934.

Antenatal work in England.

" In 1934 there were 1,130 official and 2,266 voluntary centres throughout the country.

The number of expectant mothers who attended were 241,144 or 43·1 per cent of the total births notified during the year.

The full co-operation of midwives is very necesary. Many local authorities now pay the midwife compensation for loss of a case referred to an antenatal clinic and found to need hospital treatment, and they also pay her fee when patients are very poor. A competent midwife should be responsible for her patient's welfare during pregnancy. But the better trained and the more intelligent she is, the more readily she understands that the detection of certain abnormalities are beyond her scope and that a medical examination at least once during pregnancy is essential. She should also follow up patients who do not return to the clinic.

Side by side with the development of the antenatal clinics there is growing up an antenatal service by general practitioners, to whom fees are paid by Local Authorities for the antenatal examination of women booked by midwives. How far this can effectively replace the antenatal clinics may be doubted. A number of Local Authorities have also arranged for the reference of difficult cases to a consultant. Only 15 areas have so far failed to make some provision for antenatal care."

I owe this report to the courtesy of Dr. M. I. Balfour, now in London, and I wish to add the further information she gives.

" Antenatal clinics under Local Authorities are held once or twice a week usually by a medical woman who is in the service of the Local Authority. She is assissted by health visitors or nurses. The health visitor when she sees a pregnant woman in the course of her visiting presses her to attend the clinic. A careful examination is made and the woman is generally told to attend forthnightly. Usually medicine is not given, but the women are referred to their family doctor for her confinement. A note of the examination is sent to the doctor. If the clinic doctor thinks that the woman is undernourished and if her income is below a certain rate, a packet of dried milk may be given once a week or fortnightly. Unfortunately most mothers share this with the family. In one or two cases meals for expectant mothers have been arranged for."

Germany.

In Germany the work is done on somewhat other lines. Germany is so lucky to base her Welfare work on the compulsory State insurance. And a second factor is the excellent training and supervision of midwives. In Germany stress is laid on the perfect technique of the normal case; every midwife or student is rigidly drilled in the simple but safe conduct of the delivery of a normal woman and through this the midwives get to learn their limits and to respect cases which are above their capacity. There are rather severe conditions concerning health, intelligence, education, moral conduct to be proved before a woman is allowed to take up the training. The training takes 18 months. The midwife is under the strict supervision of the district or city medical officer; she has to keep a very detailed diary on every case she has to undergo, a re-examination every two years and a refresher course whenever the health officer finds it necessary. If she has been handling a case of fever she is not allowed to touch any other case within 8 days. The refresher courses take place in the midwifery training schools, which mostly are combined with homes for pregnant women, who can stay there for 4 to 8 weeks before confinement, doing some light household work and giving at the same time splendid training possibilities for the future midwife in antenatal care. Mostly antenatal clinics are combined with these institutions. So the German midwives have a good antenatal training and the public, knowing this, has great confidence in the midwife. All middle-class ladies book their midwife early, she superintends the pregnancy and is bound to send the woman to a doctor or a hospital whenever she finds anything wrong with her. The German middle-class woman is educated to take care of her health and she need not be afraid of spending money in seeking advice or cure, as the State insurance, which is compulsory for all drawing less than a rather stately income, will cover the expenses. For some time there has been a discussion whether the insurance should also pay the costs when advice was sought for Schwangerschaftsbeschwerden—that means slight troubles of pregnancy. But as it was realised that prevention is economic, the insurance agreed to pay also the costs in these cases. For those who are not insured and who are too poor to pay for medical help, the Fursorgepflichtverordnung—the order of taking care, from 1924 compels through legislation the civil communities to grant all necessary help. The antenatal clinics are of course free. With the lower class women, who very often will not be so careful with their health there is another form of supervision. If they want any of the benefits given to the poorer women as additional food (milk, rice, flour, sugar, fat) or if a working woman wants temporary leave from her job, they have to bring a certificate from a State or city health officer, who is bound to examine her carefully on this occasion and if anything is wrong with her, sends her to antenatal clinic or a hospital.

So we find in Germany the antenatal care based principally on education of the public, on providing a really first class type of midwife, on realising the great influence of the midwife with the mother and making sufficient use of this unique influence. At the same time all possible facilities are offered from the side of the State. This system was highly developed during a time of urgent need, during and directly after the Great War. I wish to stress this, because it shows that a country need not always be rich for procuring good institutions, it must only be realised that the country is not rich enough to waste life and health of her children. I think I need not mention that besides this official work, there is plenty of room for semi-official and voluntary help which is also given.

Antenal work in India.

And India? I tried to get some information about the antenatal work done in India, but Dr. Balfour from London and Dr. Ruth Young from Delhi, whom we all esteem authorities on these questions, answered with exactly the same words "I am afraid there is not much known about antenatal work done in India." So instead of describing things that are, you must allow me to deal with the most important points of antenatal care and give some glimpses on what is done in Mysore.

To make the period of pregnancy as healthy as possible we need the co-operation of the pregnant women, we have to fight against her ignorance and superstition and to teach her the simple rules of antenatal hygiene, the importance of medical supervision and of a safe confinement.

The better the teacher, the greater the success—all of us who have to deal with Welfare work know what a well trained and enthusiastic health visitor, preferably with a midwife's training, means in this fight; as well for giving advice and lectures in the Welfare Centres as in following up the reluctant women, in gaining their confidence and bringing them to the clinics, or in seeing them at least in their houses.

No doubt a health visitor is much superior to a midwife for this work. But also a midwife can be very useful on these lines, the better educated she is, the higher her general standard is, the better she can realise the necessity of this additional work.

We all know the importance as well as the difficulty to induce better class girls to take up midwife's training in this country. To have a better class of midwife is as important for her midwifery tasks as for her additional tasks in the Welfare work, antenatal, postnatal and infant care. For these additional tasks the midwife needs of course a certain training. In Mysore we are just thinking of additional training

courses for midwives in Welfare work—no elaborate training of course, but simple practical training.

In Germany such courses proved very beneficial, they were not compulsory, but whenever a community wanted their midwives to take up these additional tasks, they could send them for training. The class of girls going in for midwifery training is gradually improving, but we must realise, that if we want better class women, reasonably good conditions must be provided for the midwives. It is not only the question of pay, the whole social position of the midwives must be raised. I am glad to say that Bangalore probably begins on this line by building decent nurses' quarters at the new Maternity hospital, and we find it most important that with maternity homes, however small they may be, decent quarters for the midwife must be combined.

I often read the complaint of the mother's failure to co-operate. I cannot blame the mothers, they do not see the advantages and receive a strong backing from their mothers and grandmothers. The battle against ignorance and superstition must be fought. It is the quality of those who give advice, that is the mightiest weapon in this battle—the quality of the health visitors and midwives as of the doctors.

Antenatal work is not only taking a few measurements, making a few routine analyses and exercise a so-called general supervision over the health of the mother, the work being entrusted to a junior member of the hospital staff. Wherever the conception of antenatal work is widened, wherever it is realised that antenatal work is worthy of the best skill available and that antenatal clinics require for their proper conduct, persons of ability, experience, training and judgment, the success is to be seen. If once the confidence is earned, the mothers will simply rush to the place and there is the danger of overworking doctors and institutions, which cannot keep pace with the rush.

We must realise and make those who have the material responsibilities for the institutions, realise that antenatal work wants its time—I think ¼ hour for a new case should not be too much if the work is to be done properly.

Antenatal care is still in its development and therefore it needs publicity, be it through lectures, through wireless talks or by any other means. In this educative work the importance of educating and influencing the husbands and fathers should not be neglected. Sometimes it is easier to influence the husband and if he realises the necessity of antenatal care for the benefit of his future child, he becomes a very sincere and strong helper. I believe in fathercraft as much as in mothercraft.

To become really popular, antenatal work must speak for itself. In a small town in the Mysore State the frequentation of the weekly antenatal clinic held in the hospital has under the skilful guidance of an enthusiastic medical woman increased from 8-10 to about 60 patients within 1½ years. And the women come for it from their distant villages 10 and more miles off. I found especially this antenatal clinic most impressive. The country is very malarial and in consequence of it a good deal of the pregnant women are highly anaemic. So antenatal care and treatment of anaemia during pregnancy is simply a vital question in this place. And to judge from the frequentation of the clinic, even simple countryfolk realise this.

If I see such examples and on the other hand also see the rush of women coming for the antenatal clinic to the Vanivilas Hospitals in Bangalore as well as in Mysore—in both places the medical superintendent is doing a good part of the antenatal work herself. I feel sure that the question of co-operation of the mothers is chiefly a question of the personality of our workers. From this derives a double task for those holding leading positions in midwifery and gynaecology ; to show their own interest in antenatal work and to give education and rouse interest for this work in those who are under their training.

As to the medical observation of the antenatal period, I do not think much need be said about it before this congress as it would supply material for a whole paper. So I think you will agree with my dealing only shortly with this important subject.

Ailments concerned only indirectly with pregnancy :

20 per cent of the total maternal deaths are due to intercurrent disease. Half of them occur in women suffering from chronic heart, pulmonary or kidney diseases. These are women who are actually unfit to bear children.

Besides these women unfit for bearing children at all, we have cases of temporary unfitness—high grade anaemia, general exhaustion after disease or too frequent confinements. These temporary unfitness will in a number of cases be a danger for the life of the mother, but still more for the child who often is born before time and even if it is a full time child, will very often be one of the weaklings who are so heavy a burden on society.

In all these cases prevention rather than antenatal care is required. An existing pregnancy should only be interfered with if there is acute danger of life for the mother, and this responsible task should be left to the big hospital. In all other cases all possible help should be given to pull the woman safely through the present pregnancy and she should

be advised to come to the postnatal clinic for further treatment and advice how to avoid a future pregnancy. Work on these lines with keeping these women under constant medical control, proved very beneficial in Germany.

Investigation about venereal disease should be a routine measure in the antenatal clinics as well as testing the urine and taking the blood-pressure, but I know that this is rather an Utopia under the present circumstances, so I want to stress only that wherever there is any suspicion of venereal disease with the pregnant women, investigation must be made and regular treatment must be given, if the investigation gives a positive result. And we must always realise that the treatment cannot be fully efficacious if we do not get the husband also to be treated. The proper treatment of veneral disease is surely one of the most important measures to cut down maternal morbidity and infant mortality.

Besides venereal diseases high grade anaemia, be it on account of Malaria, Hook-worm disease or other reasons, needs earnest consideration. We all know cases of women with uncontrollable bleeding—bleeding to death—out of anaemia after a normal confinement, or cases of women dying from heart failure during confinement " her blood being so thin that it nearly does not stain the sheets ". These high-grade anaemia cases, unknown to me during my years of work in German Maternity hospitals, seem to me most pathetic, because they can be avoided if regular antenatal treatment is given in time.

I only mention the conditions causing anticipations of difficult labour and complications during pregnancy such as threatening toxæmia or ante-partum haemorrhage. Each case of toxaemia during pregnancy should be treated in a hospital; for these and other cases sufficient beds should be provided for antenatal treatment. There has been much discussion whether these beds should be in maternity hospitals or in general hospitals, both having advantages. I do not think it is so important where they are, it is only important that they are at all provided.

As Ruth Young says rightly, at present, skilled help cannot be provided for all labour cases, but antenatal care should help us to pick out the cases, where difficulties are likely to be met with in labour and skilled treatment should be secured for them.

Much is known about the diseases of pregnancy. Good antenatal work with carefully kept records will be not only beneficial for the mothers; it can also be a great helper on the line of scientific investigation and research work.

If antenatal clinics would to some extent standardise their methods and records it would be possible to obtain valuable data on preventable maternal mortality.

Some Aspects of Antenatal Work.

Is antenatal work to be done in clinics or in Welfare Centres? I do not think we should bother about it. Antenatal care is so terribly needed in India that it should be given wherever it can be done in an efficient way. The only danger which may be avoided is that the different institutions do not co-operate and overlap each other .

I do not think that I need to give any advice to this Gremium how to conduct an antenatal clinic. If there is any special question I shall gladly answer it. I also omit a very important problem the *antenatal care for the working women.* When I omit this question on which I have specialised to some extent, it means that I think this problem too difficult and too important to deal with it in a few words; it is a "subject by itself".

With all our medical interest and skill we must not forget that the expectant mother is not—as Letitia Fairfield calls it—"*an ambulant pelvis*" but a human being with body and soul and that all antenatal care should consider the mother in the setting of her home—a suggestion easier to be made than successfully to be followed in India—where poverty, superstition and lack of education are terrible handicaps. Anyhow we have to face the importance of this question. We have to realise that nutrition during pregnancy is a burning question. Much education work on these lines is to be done with the middle-class women. But what to do with the poor? Milk and other foodstuffs given to the mothers home will be of little value, as she is sure to share them with her family. Meals for expectant mothers would be very valuable and how best to provide them is a problem with which charitable institutions or Samajas that want to help in the Welfare work should deal very earnestly.

Studying the housing conditions of expectant mothers will teach us, that very many houses are not of the kind that secure at the time of delivery freedom from danger. Even many middle class homes, that could provide a decent place for confinement, will fail to do so on account of lack of knowledge, tradition and superstition. In these cases education as well of the women as of their husbands is necessary. With the poorer classes—and I suppose all of you have like me seen houses where you really will not know how and where the woman will lie down—maternity homes which secure hygienic conditions for a normal confinement with skilled kelp must be provided.

But can the women be induced to make use of them? I have become very optimistic after seeing the splendid success of these homes in Kolar

Gold Fields where they have built 5 maternity homes, each of them giving accommodation for 8 to 10 women, Midwives' quarters are combined with the homes. Only coffee is given to the women, their relatives bring food, they are allowed to come and go whenever they want. A lady health visitor controls the homes regularly. This, in my opinion, is very essential; we all know the advantage of a hospital with strict rules. These places with their relative liberty want strict and at the same time tactful superintending, if they shall keep up a good standard. I think the idea excellent and suitable to the local conditions; not to interfere with the personal freedom and at the same time give all facilities for a hygienic and good confinement and lying in period. And the frequentation of these homes, though they are rather new institutions, show that they seem to be something that is appreciated by the public.

Mysore State in realising the necessity of such homes is beginning to build them up in Bangalore and in rural areas. In the latter it can of course only be done in places, where a midwife is residing. And the control of these midwives in the rural areas will be a problem for itself.

But the better the midwife the less control is needed, therefore better class midwives are an even still more urgent need for the rural areas than for the towns, where a strict supervision is possible.

But as it is the first step to have a midwife for the place, Mysore State has a scheme to provide one midwife for each Hubli with the help of the Red Cross and the local bodies. These midwives shall be bound to give also a certain amount of simple antenatal instruction and care, for which of course they must be trained.

In finishing my paper, I want to stress that antenatal care is only a link in a chain. How can antenatal care be really effective, if we do not try to give a solid foundation? We know how disastrous contracted pelves are; should we not do everything to prevent rickets with little girls, knowing them to be one of the chief reasons for pelvic deformation We know the disastrous influence of venereal disease, Tuberculosis and other diseases on pregnancy. We try everything to avoid infant mortality, but if we do not see the needs of the toddlers and school-children, our work will be to some amount only postponing death for some years. So real Welfare work must be a chain leading through the whole life, and we must realise that no chain is stronger than its weakest link, and until now no doubt the antenatal care is a very weak link and needs all our efforts to make it strong and effective.

THE ORGANISATION AND CONDUCT OF MATERNITY AND CHILD WELFARE SCHEMES.

BY MRS. VEERASINGHE CHINNAPPA

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1. *History.*—An attempt to collect a few ideas about the organisation and conduct of Maternity and Child-Welfare Schemes and to put them down on paper naturally leads one to survey briefly the history of the Maternity and Child-Welfare movement everywhere and particularly in this country. Though many experiences are common to organisers all the world over, nevertheless many facts social, environmental and economic are peculiar to our land. Our development so far has therefore proceeded on slightly different lines, and must exhibit the same variations in the future if the maximum results are to be attained at minimum costs. What is more to the point is that few facilities are available. Without tiring you, I would like to note first those points common to the history of the services in this country and elsewhere. The first of these which may well encourage us in these days of hurry and haste is that the establishment of public opinion in this matter has taken time, as long as half a century or more, in the case of a country we may well take as our example, England and Wales. It is difficult to assign a definite beginning to any movement for social amelioration. But from the 18th century onwards the maternity and Child-Welfare movement has had its local fore-runners The foundling hospitals started a good work; maternity hospitals were later provided; a few enthusiasts attempted to spread a knowledge of methods that should be adopted for successful bringing up of babies. In the 19th century there was a growing interest in the welfare of young children, that found expression in many Acts of Parliament. Agitation at this time roused the public conscience and it showed that Acts of Parliament if efficiently administered could do much to protect the more helpless members of the community.

2. *Beginnings and Source.*—The maternity and Child-Welfare movement in England is thus made up of many agencies . chief among these being three separate groups of activities; first, the agitation for protection of the foster-child; next the movement for the tate recognition of midwives; and thirdly an investigation into child mortality undertaken in 1867-69 by tne Obstetrical Society of London on the initiative of Dr. William Farr.

3. *The Infant Welfare movement.*—The "Infant welfare movement" seems to have grown by itself and aside. From 1851 to 1901 the mortality rates kept between 156 to 163 (rates we would consider good in this country). Many people were anxious, many others

welcomed the fact; for then as now there was the dread of over-population, which found full expression in the writing of the Victorian Economists. Then in England as now in India, it seemed an obvious way of explaining unemployment and other problems of poverty to say that the population was too much for the country. As experience teaches us now, better counsels prevailed. First the appalling waste of infant lives through diarrhoea was examined with a view to prevention, and Dr. Newsholme now Sir Arthur Newsholme, who till lately was the presiding genius in the field of Public Health in England, in his Presidential address to the Society of Medical Officers of Health in November 1889 stated his general conclusion which was that "the fundamental condition favouring the epidemic was unclean soil, the particulate poison from which infests the air and is swallowed most commonly with food especially milk". He attached importance to prevention; "to methods of improved scavenging, better paving of yards and streets, the substitution of the water carriage system for privies, and the municipal supply of sterilised milk." We may well seek to apply these methods to ourselves in the present day. Although the importance of these measures was recognised, it seemed important to find for the artificially fed infant and for the baby with the poor and ignorant mother, the safety enjoyed by the breast-fed infant and the infant with an intelligent and educated mother. It became necessary for the authorities responsible for public health to do something effective to raise the standard of infant care. Work on these lines had begun forty-years ago; some sanitary authorities issued suitable leaflets, others supplied gratuitous treatment for summer diarrhoea; others employed health visitors to give simple practical instruction in baby care. New methods began to be adopted before the end of the 19th century. Fresh developments in France attracted attention in England and were introduced into one town Council in England. The first international Infant Welfare Conference was held in 1905 in Paris. Three local authorities in England sent representatives—these urged their respective authorities to convene a Conference in England. The first National Conference was thus held in England in June 1906 under the patronage of their Majesties King Edward VII and Queen Alexandra. Our first Conference was held in Madras in 1920, followed by an All-India Conference the same year. Since then the Municipality held one annually for several years. As signified by your presence to-day at the maternity and child-welfare session of the Obstetrical Congress, we have moved even further.

4, *Development of work under local bodies.*—Progress of local Goverment is facilitated by State grants and it is interesting to note that in England the first grant for child welfare by the Government through the Board of Education amounted to £5-13-6 in 1908 to the St. Pancras School for mothers. In 1914 Government decided that Exchequer grants

should be made on a wider basis; the local Government Act of 1929 strengthened the development of maternity and child-welfare service under local bodies still further. Simultaneously with the Act was issued a memorandum setting forth the elements of a complete scheme of maternity and child welfare urging expansion in two directions, better antenatal and natal conditions and continuance of work beyond the first year of life. The pre-school child then came into the limelight, and a good deal has been done for him since through improved clinics at which medical advice is available, a more comprehensive scheme of health-visiting, nursery schools, and day nurseries. During the war the movement made rapid strides; Government helped much. The chief cause for advancement was however the awakening of the national spirit which sought to express itself in various activities undertaken for the national good. Child-welfare centres increased from 650 in 1915, to 1278 in 1918 and to 2,820 in 1933—local authority centres alone increasing from 300 to 700 and to 2,055 in 1933. Provision was made of milk and other foods for expectant and nursing mothers and for toddlers; local authorities made provision for maternity beds, for hospital accommodation for infants, homes were opened for children of widowed, deserted, or unmarried women. Eighty of these received Government grants The increase in demand for women's labour caused the opening of a large number of day nurseries. The Children's Jewel Fund is a remarkable instance of what voluntary effort could do—a pearl necklace from the Duchess of Marlborough fetched £5,000 and the fund had raised nearly £70,000 when it closed in 1920. The Maternity and Child-Welfare Act of 1918 is one of the important landmarks in the history of the movement. It required local authorities to undertake approved schemes of work, and the local Governments were prepared to sanction grants up to 50 per cent of approved expenditure. It was the first instrument of the law by which women were entitled to express their opinion and to make their own special contribution to the working ot these schemes under local authorities. In the year 1919 the sum distributed by the local Government Board in aid of Maternity and Child-Welfare was £218,000, truly a favourable comparison with the £5-13-6 made to a school for mothers in 1908. At the end of the war period therefore the movement was newly equipped and ready for a further and more effective advance. This has been effected steadily since.

5. *Health visiting.*—Health visiting has come to stay as a profession. After people with various qualifications had been tried, qualification and training were definitely laid down, There are 15 institutions recognised by the Ministry of Health for the training of Health Visitors. These receive grants and are subject to periodical inspection by the medical staff of the Ministry. At the end of 1933, there were 5,484 Health Visitors. This profession which began in 1862 as a spare

time occupation for a few public spirited ladies in Manchester and Salford has during the last 40 years developed into a new profession for educated women. The work is full of human and scientific interest and offers opportunities for expression of personality, and work of high social utility. In India too the need for efficient health visiting was recognised by independent workers all over the country. The Corporation of Madras was among the first to recognise the need, although after unnecessarily long consideration for three years proposals in this regard put before it in 1919 were accepted. Government recognition of the training was granted in 1922. In 1920 a prominent poster at the first All India Maternity and Child-Welfare Exhibition held in Delhi Stated the need for trained health visitors. Since then training schools have sprung up in almost every Province including Madras and in this Presidency these workers are being increasingly employed by both local and voluntary authorities, while the Corporation of Madras itself employs 34 trained workers.

6. *The State recognition of midwives.*—The need for the State recognition of midwives is again another realised by authorities both in England and here. It may seem amusing to us to read of the difficulties pioneers had in England from the year 1616 when Dr Peter Chamberlen petitioned James I "that some order may be settled by the State for the instruction and Civil Government of midwives". In 1813 the Society of Apothecaries took up the appeal but without result. The movement for registration began really fifty years later. It began as a result of the investigation into child-mortality by the Obstetrical Society of London in 1866. The questionnaire included the following :—

(1) "What proportion of births is attended by medical men and midwives"?

(2) "Are the midvives instructed"?

Dr. Farr in his comments on the report in 1869 dealing with the replies stated it to be a "valuable contribution to the natural history of the British baby". Replies to the first question showed nearly 75% of the births were attended by midwives—the replies to the second question were all in the negative. So the Society took the matter of training into their hands. They instituted an examination and issued a certificate stating that the holder was a "skilled midwife", competent to attend natural labour. Six received the certificate in 1872 and 929 in 1900; certified midwives now total 5,329. Aided by the British Medical Association the importance of registration of midwives was urged upon Government and they submitted a draft bill in 1883. The Midwives Institute formed in 1889 promoted the bill. But the

bill was not passed owing to the opposition of medical men who feared loss of their midwifery practice, who felt it would be against the public interest to recognise an inferior kind of medical practitioner. One of them stated that "this registration of midwives aims at preventing the natural and desirable extinction of midwives". Another objection came from a layman who objected to the need for character certificate from clergymen, since he thought it was giving the clergy too much power. After long delays due to lack of support, the Midwives Act was eventually passed in 1902. The Act set up a system of administration both central and local. The central body created was the Central Midwives Board whose chief duties were to keep the roll of midwives, to frame rules regulating the certificate and the practice of midwives. The local administration was left to the Councils of the Counties and County Boroughs. These, as local supervising authorities, had now many new and important duties, which they carried out in the various areas with varying degrees of efficiency. All did not appoint competent officers to supervise the midwives, no provision was made for payment of doctor's fees in cases of abnormality, many doctors were unpaid and sometimes the midwife paid the fee. The difficulty was only partly met in the different areas until the Midwives Act of 1918 entitled the midwife to call in the doctor, instead of merely advising the patient to do so; and it became the duty of the local supervising authority to pay the fee of the doctor. The first Midwives Act of 1902 therefore really led to the provision of maternity services by the local authorities The first examination under the Central Midwives Board was held in 1905; from that time onwards 2,000 successful candidates were added to the midwives. Out of 35,563 on the roll in 1913, only 14,447 notified their intention to practise. Most of these were untrained; 12,521 of them had received the Board's certificate solely because they had produced satisfactory evidence that they were *bona fide* midwives for at least a year before the passing of the Act. It was just before the war that the trained midwives began to form the majority of those in practice. The situation in India need not therefore be very depressing. The great lesson to draw from the history of the movement in England is that we need time in this country as elsewhere. The moment of public awakening cannot be that at which all schemes could be presented or worked on a finished basis. In this Presidency there is the Nurses and Midwives Act of 1926 but the practice of widwifery by uncertified women is yet not illegal and cannot be made so until the supply of trained midwives can meet the demand.

7. *Policy of the Public Health Department, Madras.*—The Public Health Department has held the supply of trained midwives in the forefront of its recommendations to local bodies desirous of undertaking maternity and child welfare work. The employment of

these in increasing number was however dependent on various other conditions. First an increase in the number of the training institutions was required. Secondly these had to be representative of the different linguistic areas of the Province; thirdly local bodies had to be stimulated to employ them as they were made available; an even greater need was the establishment of satisfactory service rules; payment of adequate salaries; last but not least women appointed to a domiciliary service needed supervision of and assistance in their work by women medical officers. Contact with a senior woman officer was necessary for safeguarding the status of the profession and for removing a stigma attached to it, which was the result of a vicious circle created by poor pay, lower than that of a child's ayah—unsatisfactory service conditions and the lack of protection to women workers posted for domiciliary service among all classes of population. The consequence was that the profession failed to attract suitable women; and those who entered it had little or no education. These helped to perpetuate the evil. The integrity of the profession and its value have been maintained to some extent by a few worthy followers in the past—it is encouraging to note that their names are fast increasing at present. It has been my experience to inspect midwives of all sorts; some of whom imbued with the highest sense of duty have faced hardships and exhibited skill worthy of the highest regard, while others with no sense of duty, happy in their lack of professional knowledge and skill and thereby of responsibility, have wandered from one appointment to another, creating a tradition which all the maternity and child-welfare forces of the present day unite to dispel.

8. *Training Schools for midwives.*—28 institutions in this Presidency are recognised by the Nurses and Midwives Council of which the Surgeon General is the President and the Director of Public Health a member. The membership of the Director of Public Health has been the means of securing for the training institutions helpful co-operation with the department of Public Health to which is entrusted the organisation, direction and supervision of maternity and child welfare services under local bodies. This is effected through the various medical officers of the Department of Public Health who have Women Medical Officers as special assistants for maternity and child-welfare. Among recognised training institutions are Government Hospitals where abundant facilities exist both in the way of teaching, staff, clinical material and satisfactory equipment; but mention must also be made of the many women's hospitals staffed by women, mostly Missionary institutions which are responsible for the out-turn of a class of midwives with previous training in general nursing, whom I have found in my experience of 19 years to be reliable workers, commanding the confidence of their patients.

9. *Ante-natal care.*—Ante-natal care has been given its right place quite early in the history of the movement which practically began with the efforts of the Corporation of Madras in December 1917. The first antenatal centre which owed its inception to the pioneer Dr. Ballantyne, was opened in 1915 at Edinbourgh and came under the administration of the City health authority in 1917. It was the first municipal antenatal clinic in Great Britain. Madras may well be proud of the fact that in spite of its backwardness in Public Health, the number of cases attending its antenatal clinics between 1919 and 1934 has increased ten-fold. It is in a large measure due to the edücative work at these clinics that the cases attending the hospitals increased year after year, till now they have all more than doubled their figures. The horror with which the hospital was regarded, the delay in removal until the last moment and until the fortieth relative including one several miles away had been consulted, the anxiety and helplessness with which municipal child welfare staff, often called too late themselves, watched the downward progress of the patient, have now given place to ready acceptance of the advantages of hospital cure. This is evidenced by the fact that motor Ambulance provided by the municipality in 1922 (after three years of correspondence) has kept busy day and night removing many cases to the various hospitals in the city during 1933.

10. *Special features of the movement in this Presidency.*—The establishment of the maternity service as an integral part of the Maternity and Child-Welfare Scheme under a local body has been a special feature of the development of the movement in this Presidency. From the very beginning it has been the starting point, or more than that, the foundations on which the whole system has been built. On its effectiveness and efficiency has depended the readiness with which the woman health worker has been welcomed into the home. The midwife, as America is realising late in her public health programme, will always remain the pioneer woman health worker in any area. A great deal yet remains to be done to strengthen her position. But a great step has been teken by the Government who acting on the advice of the Director of Public Health, have laid down scales of pay, service rules and placed the midwife under a local body in as secure a position as any other servant under that body.

At the very beginning of the organisation of a Maternity and Child Welfare Scheme in this Presidency 16 years ago, we emphasised the need for inclusion of a maternity service as a part of it. We have also worked along the line of establishing the maternity and child-welfare service as a whole under the administration of the local body. No step has been taken which was not warranted by actual experience to be the most easily workable, producing besides the maximum

of good result with available facilities. For the fact remains that these facilities are few yet, and that financial allotments, which are really the sinews of war have yet to be increased by many times their present amount. Suffice it to say this may be expected with confidence, for those made by local bodies have been doubled during the last three years, and if the history of the movement in England has any value, Government grants must come sometime. It is interesting to note that in England opinion has gained strength that 'the national maternity and child-welfare services inclusive of domiciliary aid, and a service of midwives had best be formed under local bodies, even as a national educational service has been developed under them with generous State grants. This conclusion has been arrived at after trial of a midwifery service largely composed of independent midwife practitioners for several years. It is encouraging to note that as far as this Presidency is concerned, the very smallness of the independent midwifery profession has helped us to begin aright as to the authority under which they shall be appointed—a fact which indicates we may yet steer clear of many difficulties experienced by others, if we have previous knowledge of them.

11 *A plea for scientific support of Maternity and Child welfare work.*—It is true that critics, some unfriendly, some short-sighted, have remarked that in spite of maternity and child welfare schemes, figures of Eclampsia and Puerperal Sepsis have gone up. To accept their statement as correct would be to condemn the increase in both number, strength and efficiency of the maternity hospitals during the past few years. The reply to them is in the words of Professor Munro Kerr and Sir Arthur Newsholme, who would wish to " emphasise the futility of making comparisons between the death rates of the past and the present. There is a progressive advance to exactness in notification and accuracy in classification. This possibly counterbalances any improvement in the maternity service of the country generally and may explain why there is no apparent lowering in the puerperal death-rate". Sir Arthur Newsholme states " if we add together these considerations—altered certification, increased abortions and smaller families, it becomes obvious that the really improved position for comparable conditions justifies the large amount of medical effort. I do not suggest that further efforts are not needed. They are urgently called for. But do not let us proceed on the assumption that efforts already made have been futile". As another authority puts it : " The time is not ripe for dogmatic statement". In Madras City within a period of 16 years about 16,000 cases of labour out of a total of 25,000 have been added to the number of those attended by skilled agency ; therefore, increasing information about this number of confinements has been available year by year as regards causes of morbidity and mortality. Ignorance in the past of these causes cannot be taken to indi-

cate low rates of maternal mortality and morbidity. We should beware of placing ourselves in the position of those midwives who have been in municipal service for nearly 15 years and according to their own statement have had about 300 cases annually to their credit, and who nevertheless proudly assert that they have had not a single death to report. It may well be that maternal mortality has to some extent been kept up by what may be termed statistical causes, and that possibility should be borne in mind before we draw the pessimistic conclusion that the preventive measures hitherto adopted have been ineffective. A body of scientific experts such as are collected in this room should hardly need this explanation, but the fact that it is made indicates the extent to which propaganda has to be carried on by all of us here.

12. *Voluntary support*.—The voluntary movement in this Presidency resembles, and yet differs much, from the movement in other countries. I have been thrilled over and over again reading in books as they appear from time to time, my own experiences recounted by workers elsewhere. A great difference, which has also been a drawback, is that voluntary effort has not been the same force here. Not without a certain amount of effort was the first "committee" of voluntary workers called together in 1920 by the Superintendent of Child Welfare Scheme to assist the official workers of the Corporation. The present Vicerine, the Countess of Willingdon, was its distinguished and most zealous patron, and this committee later took over the management of the Madras Presidency Maternity and Child Welfare Association formed by the breaking up of the Presidency Health Association. The Association has now been amalgamated with the Red Cross Society which has a special sub-committee for maternity and child welfare work, led by Her Excellency Lady Erskine, this committee of voluntary women workers is giving valuable assistance. The help from voluntary associations has been more on the side of formation of public opinion rather than in the shape of any contribution to effective administration of even individual centres. The financial position of most voluntary associations started for maternity and child welfare has been ever precarious, and their existence largely dependent on the enthusiasm evinced by prominent women, often the wives of Government Officials always awaiting the next transfer. The Central Committee of the Madras Presidency Maternity and Child-Welfare Association now amalgamated with the Indian Red Cross Society has decided that their duty in the field of maternity and child welfare should be to do all they can in the way of educating public opinion in favour of such work, while leaving administration in the hands of the local bodies. The Society gives a small grant towards the salaries of health visitors during the first three years of appointment. After trial of other methods of qualification for these grants it has been decided

by the Society they should hereafter be subject to the approval of the Director of Public Health.

13. *Conduct of the services.*—The conduct of the maternity and child-welfare service in this Presidency has therefore much in common with the administration under the Ministry of Health, England and Wales. Government orders issued during the last two years lay down that schemes under local bodies should be approved by the Director of Public Health, the duties of each member of the staff including the Medical Officer of Health, Woman Medical Officer, Maternity and Child Welfare, health visitors and midwives, have been laid down in approved circulars of the Director of Public Health; the allotments for maternity and child welfare made by local bodies come under his scrutiny; inspections are made by the medical staff of his department for the purposes of direction and guidance and for satisfying himself that the services are efficiently administered. The scope of the activities to be undertaken by the staff of a scheme have been defined and a survey carried out which has disclosed a disquieting state of affairs as to the extent of antenatal care and maternity relief available in this country, particularly through midwives in rural areas, maternity hospitals and women medical consultants; to the fact that financial allotments made by local bodies amount to 1 per cent or less or nothing at all of their income; to almost total absence of a health visiting service, and of an inadequate number of maternity and child welfare centres. I have not touched on several other aspects of the maternity and child welfare movement because they will not be within the field of practical achievement for several years to come. The goal towards which we can steadily work at present is the provision generally of a midwife for every 100 births, a health visitor for every 400 and a medical woman available as consultant to 1,000. These should be employed in schemes under the administrative control of the medical officers of health, who are themselves subordinate officers of the Public Health Department and are thus bound to accept responsibility. Facts relating to maternal mortality and morbidity can then be gathered with a certain amount of accuracy enabling us to obtain an intelligent grasp of the situation. The development of these primary essential aspects of the services through the next few years will afford time not only for the collection of statistics during a sufficient length of time, and this is necessary for correctness of conclusions arrived at, but also give time for the formation of public opinion in support of further development. Twenty-one new schemes under local bodies have been approved by the Director of Public Health during the last two years with a woman medical officer in direct charge and employing health visitors and midwives. A post-graduate course for those already in the services has been approved by the Government and will be started early in the new year.

It augurs well for the future of the movement in this country that as was done by their illustrious compeers in England in 1866, the Obstetrical Society of India should express its interest in the movement by devoting a session to the consideration of the subject. For side by side with schemes of public health authorities, maternity and children's hospitals must develop increasing strength and efficiency. No sane thinker will agree with the Health Officer who, carried away with enthusiasm, said "Down with Hospitals and up with Health Units".

14. *An explanation and a plea.*—The maternity and child-welfare workers of the medical profession share with colleagues engaged in preventive medicine a grievance against the older curative branch. Time can and will remove the grievance which is common all the world over. The work of health services cannot show spectacular results in the shape of human beings cured of terrifying ailments by professional skill and scientific knowledge sometimes with incredible swiftness; convincing statistics relating to advance of public health can only be published after several years of work; nevertheless the services through their many efforts keep the community and the individual free from the experience of suffering and the dire results of disease. To an ignorant public, a hundred cases where Eclampsia or Cholera has been prevented, are less of an example of useful work than one severe case cured, and it is here that the obstetrician and gynaecologist attached to large hospitals may help to form helpful public opinion through correct exposition of scientific facts. The work of the maternity and child-welfare services have often been undeservedly condemned, unheard and unrepresented through neglect of facts which would have shown the work in its proper prospective and which could have been obtained for the mere asking. Such condemnation leads only to one result; a reaction on the health of the community through neglect of these ameliorative services.

The ultimate object of the obstetrician and the gynaecologist is, I believe, not merely the pursuit of knowledge of these sciences for mere pleasure, nor is it even the attainment of professional skill in practice but one that is common to him and to his colleagues in the health departments—"The healthy mother and child," for they form the most valuable asset to any community. Measures undertaken for the health of children are also those which benefit the community, and truly may it be said "A little child shall lead them."

INFANTILE MORTALITY— ITS CAUSES AND PREVENTION.

BY DR. M. B. PRABHU, M.D., (MAD.), M.R.C.P. (ED.), M.M. (LOND.).

The subject of infant mortality has been engaging for years the attention of medical men, as well as non medical, who are interested in problems of health all the world over. It is a vast subject and it appears to me almost a presumption on my part to present it before you in a space of ten or at the most fifteen minutes.

There are many causes responsible for this mortality and at first sight they all appear to be easy of solution. Remove the poverty of the people and infant mortality will reduce itself, is the view held by many. Spread education among the masses, and infant mortality problem is solved, is the view of others. That it is due to over-population and that birth control is the effective measure, is the conviction of some others. While I admit that all the above views are partially correct, the question is whether they go far enough.

If England and Wales had an infant mortality rate of 110 in 1911 to 1915, and 64 in 1934, can we infer that England was poorer before the War or less educated? For us here, the problem is very pressing because the rate for the whole of India is 170 and for large cities, it is 230.

The causes of infant mortality can be best studied by an analysis of the different causes of death of an infant during the first year. An analysis of deaths in the City of Madras during 1932 shows that 6,622 infants died during the first year giving a mortality rate of 236 per 1000. Of these, 1,451 died during the first 7 days (21 per cent), and 2,424 died during the first month (36 per cent).

Dr. Mudaliar, in his survey of infant mortality in Madras, Bombay and Bengal for the year 1925, found that 46 per cent died during the first month. Holt and Babitt, in an analysis of 100 deaths in the first year, found that 33 per cent occurred in the first month. In the United States of America, 20 to 30 per cent. of infant mortality has been ascribed to accidents at birth or defective developmental conditions.

What now is the mortality due to accidents at the time of birth? From an analysis of 3,059 confinements in the Government Hospital for Women and Children in 1930, 21 neonatal deaths were due to trauma at birth, and of these 6 were after natural delivery, 15 being the result of interference. This gives a mortality of 5 per 1000 as a result of interference. These cases were conducted by all the doctors, house

physicians, assistant physicians and the chief physicians and if only the latter alone had conducted the deliveries, in all probability the rate may be reduced by 2 or 3, because it cannot vanish altogether. Therefore even if expert assistance is called for just at the time of delivery, the reduction in mortality rate is only slight It is not so well known that infantile mortality due to developmental causes is the most difficult to treat, and in spite of our knowledge of antenatal care, has not been affected very much.

Thus, in Prussia :—

	In 1901.	In 1925.
Infant mortality in first month	59	53
From 2nd to 12th month	140	51
	199	104

In England :—

	In 1905.	In 1925.
Infant mortality in first month	41	32
2nd to 12th months	87	43

While therefore, the infantile mortality rate has been considerably reduced by modern measures, the death rate of infants during the first month of life continues unabated.

In the first quarter of the infant's life, the mortality is largely due to developmental defects. In the second quarter, nearly half the deaths are from enteritis and a slightly less number from respiratory troubles. This is the time when the breast milk tends to fail and artificial feeding is resorted to. The artificial feeding gives rise to diarrhoea in some cases. In others, the general health is so impoverished by irregularity in feeding, that infections readily occur, particularly of the respiratory tract and of the skin.

When infants of the poorer classes come to the out-patient department for treatment, it is mostly for bowel troubles, or cough and fever or for skin infection.

Wertheimer and Wolff studied a large group of infants and noted the duration of infection as follows :—

	Average duration.
In breast-fed baby	½ to 1 week
Healthy bottle-fed baby	2·5 weeks
Unhealthy bottle-fed baby	3·8 weeks

Infection in artificially fed babies lasting about 3 times as long as in breast-fed babies. The average probability of death in the first year of artificially fed infants is 5 times more than in the breast-fed.

I am very much interested in the subject of infant feeding and nutrition and for the last five years, have been trying to study what artificial foods are good for our infants, particularly below three months. True it is that occasionally you meet with a child who has been fed since birth straight away on artificial foods without the least mishap, but inspite of extensive literature and the multitudinous foods in the market, I have yet to find a very satisfactory substitute for breast milk for an infant during the *first few weeks* of its existence. It is well and truly said by Dr. Oliver Wendell Holmes : " A pair of substantial mammary glands has the advantage over two hemispheres of the most learned professors' brains in the art of compounding a nutritious fluid for infants".

The other group of causes of infant mortality are environmental. Infectious diseases like small-pox, whooping cough, diphtheria, are no respector of children and both healthy and ill-nourished are with equal frequency carried away by them. Even the most healthy child fails to resist infection by malarial parasite or by cholera vibrios.

Having briefly surveyed the principal causes of infant mortality, the measures for its prevention can be classified thus.

(1) Measures to promote the income of the people because under-nourished, half-starved mothers cannot be expected to give birth to healthy babies.

(2) Spread of education among the masses.

(3) Mere health and education will not solve the problem unless the up-to-date knowledge of maternity and child welfare is brought home to the people.

(4) Proper care of the mother during antenatal period. This problem has to be studied further because at present our efforts at reducing the neonatal mortality have not been very effective.

(5) Proper attendance of the mother during delivery.

(6) Encouragement of breast feeding and where breast feeding fails, or is inadvisable on medical grounds, to find out a suitable method of artificial feeding.

(7) Improving the environments by proper housing, water supply and drainage.

(8) Public health measures to put down the incidence of infection and infective disease.

The State, the legislature, public health bodies, welfare schemes, well equipped hospitals, the public, all play their part in any successful scheme to bring down infant mortality. Much useful results can be achieved by co-operation between the different bodies. The chain is no stronger than its weakest link, and a central organization is necessary to see that these measures are properly linked. It is no satisfaction if a mother is well looked after during her full period of pregnancy, if she has the best medical attendance for her confinement, but being unable to breast-feed her baby, it dies of enteritis. Therefore the medical and non-medical, the specialist and the general practitioner, the State and the public, should all work hand in hand to save the child life in our country.

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THE VALUE OF POSTNATAL CARE.
A PLEA FOR POSTNATAL CLINICS.

By Dr. A. L. Mudaliar, M.D., F.C.O.G.

So much is being talked about antenatal care and about care during labour that one is apt to be led to the inference that after child birth, the parturiant is normal following the puerperium. That such is not the case will be obvious to anybody attending the practice of the out-patient clinic in a maternity institution or following the cases later in the ward. In a tropical country more than anywhere else, the damage of pregnancy persists and in the postnatal peirod the woman is likely to develop other complications or diseases which creep in insidiously. Often it has been noticed that diseases like anaemia, diarrhoea, neuritis, develop and the consequent emaciation and weakness produce general aesthenia which makes her a physical wreck and predisposes to other diseased conditions.

Many cases have been noticed where for lack of proper Vitamins, manifestations of deficiency diseases have been noted. Patients sometimes come in complaining of pain in the joints, inability to walk properly and other symptoms suggestive of decalcification.

Another condition that gives rise to an insidious form of debility follows the toxaemias of pregnancy. It is now well known that there is a certain amount of permanent damage to the system following toxaemia. The condition of occult nephrites recognised at a subsequent pregnancy implies a permanent damage requiring care and attention in between. Similarly patients who have had haemorrhages require much more prolonged observation and advice—occasionally treatment,—than what is now available, during their puerperium. Taking again the cases of abortion and vesicular mole, I think it is too often taken for granted that abortion requires very little after care or attention. That cases of vesicular mole require careful watch for a period of two years has been emphasised this morning.

The routine examination of all patients six to eight weeks after delivery has been rightly emphasised. By this means we are enabled to assess more accurately the damage resulting from child-birth and the complications following labour. Lacerations of the cervix, of the perineum, tendency for prolapse, retroversions and flexions, chronic cervicitis, vaginitis, erosions could all be properly recognised. It is of great use in assessing the damage done by puerperal sepsis and following the sequelae of septic complication.

But my plea to-day is not limited to the first examination and rightly a very important one. I plead for the extension of the period of postnatal care to at least one year after child-birth. Postnatal care does not imply attending to the woman when she is sick in the postnatal period, but it implies as in antenatul care, a periodic examination and follow up of maternity cases for at least one year after child-birth. Much has been done and is being done medically in prenatal work to put the expectant mother in the best possible condition and to safeguard her for the labour, but are we giving attention to the postnatal conditions and especially to the injuries present in the birth canal after the delivery ? If we did, there would be less talk about the gynaecology of obstetrics. There seems to be a pause between the termination of the duties of the obstetrician and the beginning of the responsibility of the gynaecologist. To whom does the patient belong at this stage ?

I believe a postnatal centre should be run at every infant welfare centre. The care of the infant would be infinitely more easy if the care of the mother were as much the concern of the child welfare worker. Not only does she require to be given advice as to the proper method of feeding, etc., but her own health has to be improved and

she requires to be periodically examined. A question of importance may here be stated. I believe it should be the duty of the obstetrician to advice about the risks of pregnancy and if it is safe for the patient to conceive after a delivery and if so after what interval. I am convinced that one of the important factors in the health of the mother is the spacing of pregnancy. I believe that for good results to be noted by antenatal care, postnatal care is essential. The time to look after the health of the mother is not when she is pregnant or in labour but long before she becomes pregnant. Just as we have realised that care during labour is frequently of little value if antenatal care has not been taken, so shall we realise more and more if we study the problem carefully that antenatal care by itself is not of maximum value unless postnatal care is taken with all our multipara.

DISCUSSION.

Dr. Chalapati Rao (*East Godavari*) pleaded for instruction in the elements of Midwifery to barber midwives and other illiterate women practising midwifery in the rural areas as it was impossible to provide, at present, trained midwives to all the villages of India. He read out the syllabus which he had chalked out for such a course of instruction. He had himself started in his place such a course which was attended by 22 candidates.

Dr. U. Krishna Rao (*Madras*).—He said that the Child Welfare scheme of the corporation of Madras was in existence for the last 15 years and was attending annually on about 14,000 cases and the Corporation was spending about 3 lakhs of rupees, and the maternal mortality rate in Madras was somewhere about 43 per 1000. He wanted to ask certain specific questions of the lecturer.

(1) Whether the maternity service of the Corporation should be restricted to particular classes of women, such as those who were indigent and whose income was below Rs. 50 per month?

(2) Should a child welfare centre have a dispensary attached to it? He personally thought that if all women who came to the dispensary were to be treated on the usual lines, with common mixtures like quinine, etc., the more important aspect of maternity service would be forgotten, in the routine work of prescription.

(3) What is the value of the side shows, the free distribution of milk, of free baths and of propaganda, such as lectures? During the last year it was reported that 82,000 children were supplied with free milk, 78,000 with free baths, and 25,000 attended lectures. Is there any value in such sort of propaganda? It is doubtful if all the milk distributed reached the children for whom they were intended.

(4) Another problem was whether the Child Welfare scheme should undertake the treatment of abortion, of difficult and instrumental labour.

He personally thought that such conditions should not be treated in the patient's house.

(5) Another point was how far the Child Welfare scheme would co-operate with the three important organizations, first the general practitioner, second the hospital authorities, and third, the recognised specialists. It has been the custom of the Child Welfare authorities, uptil last year, not to co operate with the general practitioners, and he was himself protesting against that, because if the people at home had any confidence, it was in their private medical men, and he thought that there must be absolute co-operation with the general practitioners. He also thought the co-operation of hospital authorities and specialists was necessary.

For the successful working of any Child Welfare scheme, he thought they should have maternity homes, where the more difficult cases could be treated, and where women, who usually lived in ill-ventilated, unhealthy and insanitary surrounds, could be brought and confined.

Miss Kamalamma, Superintendent of the Child Welfare Scheme, Corporation of Madras, gave a short account of the scheme, the chief activities of which were :—

Registration of expectant mothers by the health visitors.

Free midwifery attendance at all times of the night and day to the women of the poorer classes.

Free examination, advice and treatment to expectant mothers and puerperal cases.

Regular and periodic inspection of babies upto one year in their houses by the health visitors.

Free warm baths to poor children upto 5 years.

Free distribution of milk to poor children.

There were 82 midwives, 26 health visitors and 7 lady doctors and a lady superintendent.

The staff did not work within the four corners of a hospital where supervision would be possible. The difficulties of nursing patients in their homes often amidst ignorant and importunate relatives, ready to welcome and accept the opinion and advice of every passer by on the road in preference to that of the midwife can better be imagined than described. Dark and ill-ventilated rooms or koodams in which the parturient women were kept shut out from sunshine and free air, and the insanitary surroundings are some of the causes which lead to sepsis in the postnatal period ; the poverty of the mothers is also another cause. Ignorance, pernicious social customs such as early marriages, purdah system, preventable diseases, etc., are some of the commonest causes

which increase the death of the infants. Propaganda of a more intensive nature is required.

Mrs. Chinnappa (*Reply*). Answering certain of the questions put by Dr. U. Krishna Rao, she said that the Corporation began with free maternity service to all, irrespective of income. But as the demand for the service grew greater, they were forced to restrict it to the indigent class, as in Madras there were a large number of private midwives and practitioners available for the well-to-do classes. But the question would have to be considered with reference to the conditions available at every place.

Should dispensaries be attached to child welfare centres? It is often difficult to draw a clear line between health and disease; so if a mother or baby with a slight ailment attending a clinic was found to have a slight ailment, are they to be made to walk from door to door from the centre to the dispensary, and from there to somewhere else? The borderline cannot be made out and it has been accepted in countries which have been doing this work for a long time, that a certain amount of treatment has to be combined with child welfare work.

The question of the supply of free milk was never intended as an attraction. It has always been given to those mothers who needed it and she was always satisfied, having inspected hundreds of homes, that the mothers used it for their babies. Supervision was always possible, and there was no excuse for this reason to stop the supply of milk to them.

With regard to the treatment of difficult labour by the Child Welfare scheme staff, whenever abnormalities or difficulties were anticipated, the antenatal clinic referred the cases to the hospitals; but in emergency cases, *e.g.*, bleeding in a case of placenta praevia, they could not possibly leave the case for anything to happen, and they had no motor ambulance; and therefore the Child Welfare scheme had an adequate medical staff attached to it.

As regards co-operation with hospital authorities, her experience was that there was the fullest co-operation possible. Whenever cases were sent in, sometimes in time, sometimes late, they were always taken in and treated.

Co-operation of the staff with private practitioners was an administrative point, as the midwives cannot be made to work under several masters.

Maternity homes, she thought, were necessary; they were intended more for normal cases, which are generally confined in unhealthy and insanitary surroundings.

CONCLUSION.

The President (*Miss Scudder*).—We have spent three wonderful days; we have been impressed by the marvellous organization of this Congress and we are certainly very much indebted to you, Dr. Mudaliar and all your staff, who have done so much. The papers and the discussions and particularly the criticisms have been very helpful in stimulating thought and we have together faced many problems affecting India and I hope we are going to try and help to solve some of those problems. We have gained new knowledge of what people in other parts of this great country are doing in this direction, and I trust that the spirit of comradeship shown so much these three days will grow further in future. I shall always look upon these days with great joy. We have been inspired with enthusiasm; I hope that everyone of us will go from here, return home, to do far better work for India than ever before, and look forward in the days to come to the joy that we as obstetricians and gynaecologists have in bringing relief to the suffering and the sorrowing ones who come to us.

Dr. A. L. Mudaliar.—The sessions of the Congress having concluded, it is now my privilege on behalf of you all, to propose a most hearty vote of thanks to our President for the kindness, condescension and extreme enthusiasm that she has displayed in conducting the proceedings of this eventful First All-India Obstetric and Gynaecological Congress. Everyone of us has been impressed with the sweetness, readiness and peremptoriness with which she has directed the proceedings, yet with the utmost tact and firmness, which we have all been admiring these last three days. I was wondering myself, how could it be possible for her to conclude the discussions when there was a great deal of agitation among the delegates, but a smile from her and a nod seemed to pervade the atmosphere which made the delegates seem more happy in maintaining that golden attitude of silence than on reaching up the platform to speak. I am sure that all of you will agree with me that we are extremely indebted to Doctor Scudder for having presided and conducted so ably the proceedings during these three days.

I should like to add a word of thanks to the delegates who have responded so kindly to our call; to the delegates from Bombay, Bengal, Northern India and from the various States around us. I am glad to say that every Indian State in Southern India has been represented at this Congress—Hyderabad, Mysore, Travancore, Cochin. It has been a particular delight to us to welcome many of our old post graduates and House Surgeons who have so kindly responded to a personal appeal

to rally round the great old institution once more on the occasion of this the first Congress.

Our thanks are in a great measure due to the ungrudging service rendered by the band of volunteers whom we see amidst us.

Mrs. Dadhabai, Dr. Subodh Mitra, Mrs. Poonen Lucose, and Col. Shastry spoke briefly about the work of the Congress and associated themselves with the sentiments expressed by Dr. Mudaliar in proposing a hearty vote of thanks to the President and to all those responsible for the organization of the Congress.

Resolutions.

At a business meeting of the Congress held at 5 p. m. on the 4th January 1936, the following resolutions were adopted :—

1. " This Congress is of opinion that for the proper training of the Medical Students, it is necessary that a course of six months training in an obstetric and gynaecological hospital, or an obstetric and gynaecological ward and out-patients attached to a General Hospital, should be insisted upon, three months being spent in the pre-final year and three months in the final year. The Congress is also of opinion that every student should conduct personally 20 cases of labour, of which 5 cases should be conducted under supervision in a maternity institution."

2. " Resolved that the next Congress be held in Bombay during Christmas season 1937-38, the subjects for discussion being :

Obstetrics : Toxaemias of pregnancy.

Gynaecology : Cancer of the cervix."

3. " Rules were also framed for forming a permanent organization to carry on the business of the Congress between its sessions."

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